TC-177SD

AEP Model
E Model
UK Model
USA Model

STEREO CASSETTE-CORDER

SPECIFICATIONS

Power Requirements: AC 120 V, 60 Hz (USA Model)
240 V, 50 Hz (UK Model)
110, 127, 220, 240 V, 50/60 Hz (AEP Model)
100, 110, 120, 127, 220, 240 V, 50/60 Hz (E Model)

Power Consumption: 52 W (AEP, E and UK Models)
45 W (USA Model)

Track System: 4 track, 2 channel stereo

Tape: SONY tape cassette or equivalent

Tape Speed: 4.8 cm/s ($1\frac{7}{8}$ ips)

Recording Time: (with C-120 tape cassette) 2 hrs

Frequency Response:
NORMAL: 20 ~ 17,000 Hz (NAB)
30 ~ 15,000 Hz (DIN)
Fe-Cr, CrO_2: 20 ~ 20,000 Hz (NAB)
30 ~ 18,000 Hz (DIN)

Wow and Flutter: 0.08 % (RMS) weighted (NAB)
± 0.2 % (DIN)

Overall Signal-to-Noise Ratio:
DOLBY* NR OFF: 53 dB (NORMAL)
55 dB (Fe-Cr, CrO_2)
DOLBY* NR ON: inproved 5 dB at 1 kHz, 10 dB above 5 kHz

Overall Distortion: 2 % (CS-10, CS-20, CS-30 tapes) (UK Model)
1.3 % (AEP, E and USA Models)

Record Bias Frequency: 105 kHz

Inputs:
MICROPHONE . . . 2
for low impedance microphone
Maximum sensitivity: −72 dB (0.19 mV)
LINE IN 2
Impedance: 100 kΩ
Maximum sensitivity: −22 dB (62 mV)
LINE OUT 2
Impedance: more than 10 kΩ
Normal level: 0 dB (0.775 V) with 100 kΩ load (LINE OUT maximum)

Outputs:
HEADPHONE 1
Impedance: 8 Ω
Normal level: LEVEL 1 −30 dB (25 mV)
LEVEL 2 −22 dB (62 mV)

Semiconductors: 55 transistors, 46 diodes, 11 IC's
1 Hall IC, and 2 FET's

Record Head: PF155-6102

Playback Head: PF145-3602B

Erase Head: EF157-36

Motor: HC-526 (6-pole hysterisis-synchronous)

Dimensions: 435 (w) x 155 (h) x 325 (d) mm
$17\frac{1}{8}$ (w) x $6\frac{1}{8}$ (h) x $12\frac{7}{8}$ (d) inches

Weight: 10 kg, 22 lb 1 oz

*** The word Dolby is the trademark of Dolby Laboratories, Inc.**

SONY®

SERVICE MANUAL

81

TABLE OF CONTENTS

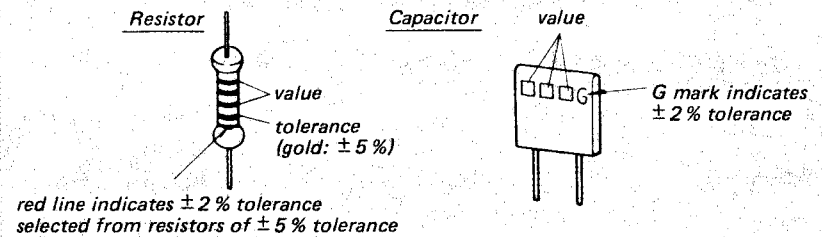
Section	Title	Page
	Specifications	1
1.	OUTLINE	
	1-1. Block Diagram	3
	1-2. External View (1)	5
	1-3. External View (2)	5
	1-4. Internal View (1)	6
	1-5. Internal View (2)	6
	1-6. Internal View (3)	7
2.	DISASSEMBLY	
	2-1. Cassette Lid Ass'y Removal	7
	2-2. Case Removal	8
3.	ADJUSTMENTS	
	3-1. Mechanical Adjustment (1)	9
	3-2. Mechanical Adjustment (2)	11
	3-3. Electrical Adjustments and Measurements	13
4.	DIAGRAMS	
	4-1. Level Diagrams	26
	4-2. Schematic Diagram (1)	27
	4-3. Mounting Diagram (1)	29
	4-4. Mounting Diagram (2)	32
	4-5. Schematic Diagram (2)	35
5.	EXPLODED VIEWS AND PACKING	37
6.	ELECTRICAL PARTS LIST	50
7.	HARDWARE	56

When ordering replacement parts, use PART NUMBERS listed in Parts Lists or shown in EXPLODED VIEWS.
Parts List reference numbers should not be used.

CAUTION

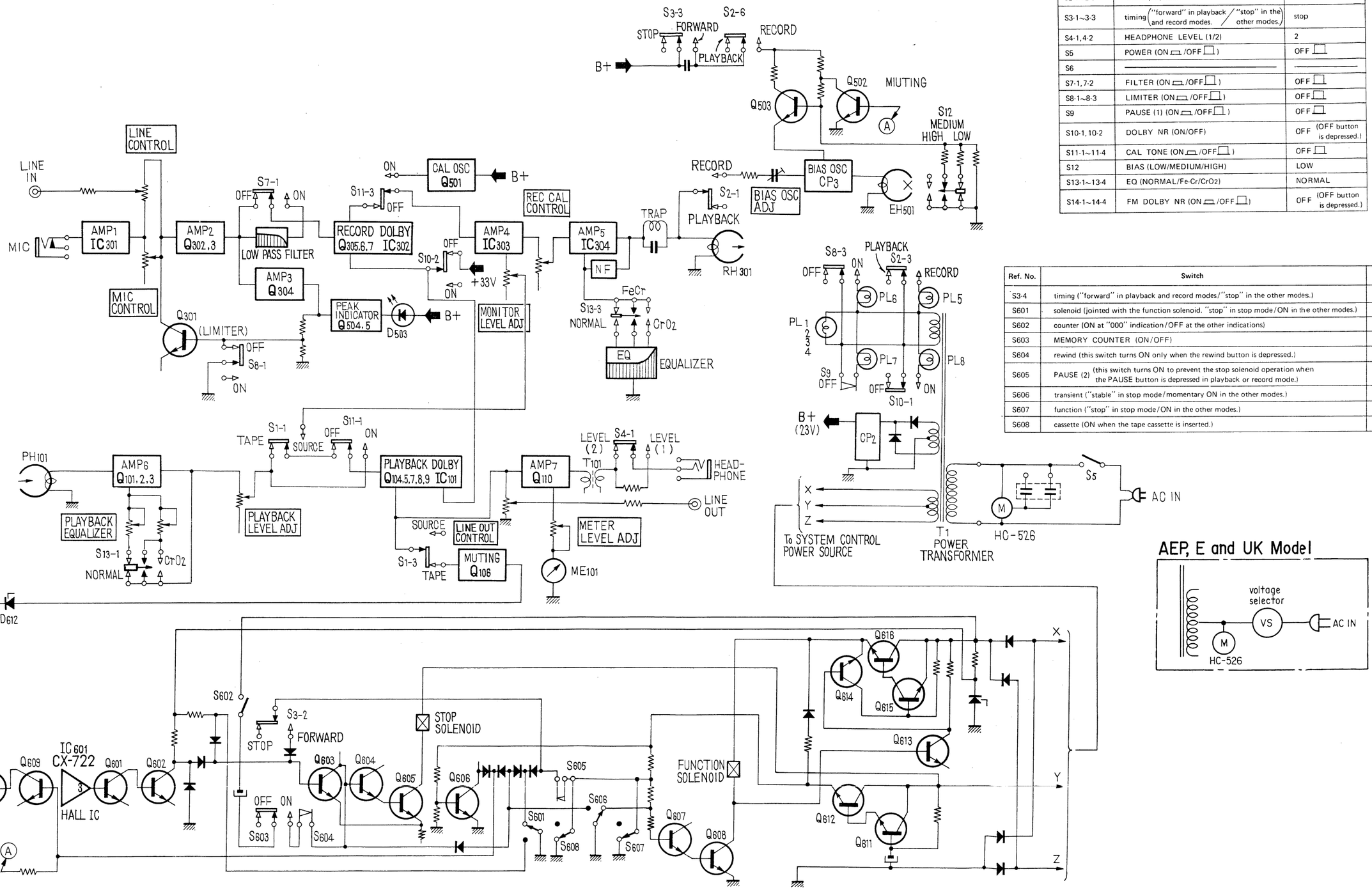
1. *Record and playback level adjustments should be carefully made. The levels must be as specified for correct DOLBY circuit operation.*
2. *When replacing resistors and capacitors needing ± 2 % tolerance, use only those with red line or G mark, as DOLBY system requires precise circuit operation.*

± 2 % Tolerance Identification



SECTION 1
OUTLINE

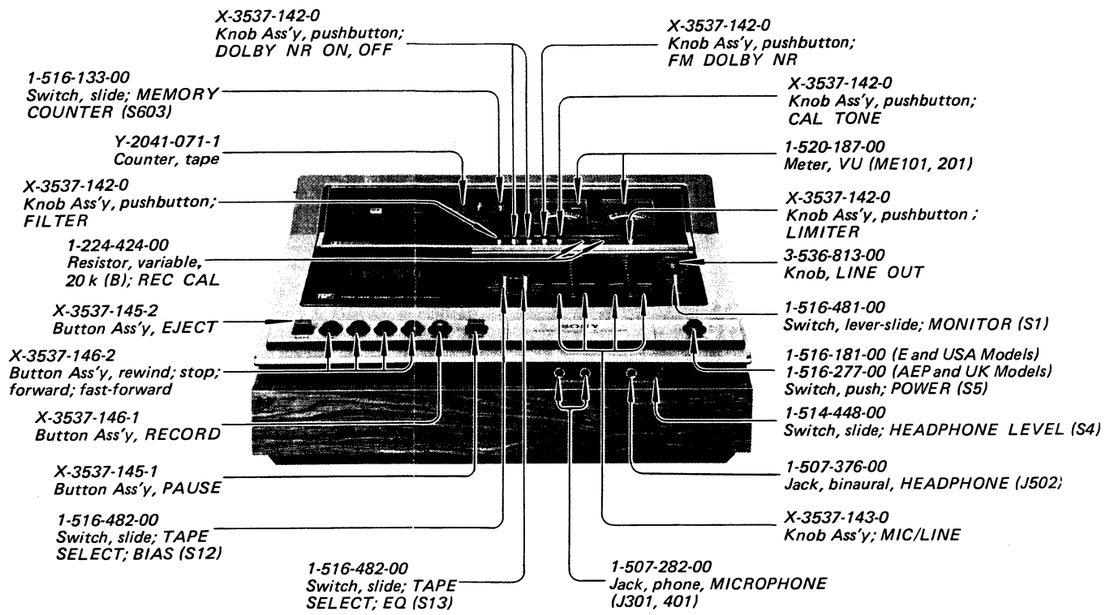
1-1. BLOCK DIAGRAM



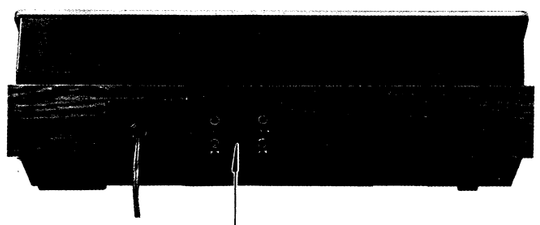
Ref. No.	Switch	Mode
S1-1~1-4	MONITOR (SOURCE/TAPE)	TAPE
S2-1~2-6	record/playback	playback
S3-1~3-3	timing ("forward" in playback and record modes. / "stop" in the other modes.)	stop
S4-1,4-2	HEADPHONE LEVEL (1/2)	2
S5	POWER (ON ⎍ /OFF ⎍)	OFF ⎍
S6	———	———
S7-1,7-2	FILTER (ON ⎍ /OFF ⎍)	OFF ⎍
S8-1~8-3	LIMITER (ON ⎍ /OFF ⎍)	OFF ⎍
S9	PAUSE (1) (ON ⎍ /OFF ⎍)	OFF ⎍
S10-1, 10-2	DOLBY NR (ON/OFF)	OFF (OFF button is depressed.)
S11-1~11-4	CAL TONE (ON ⎍ /OFF ⎍)	OFF ⎍
S12	BIAS (LOW/MEDIUM/HIGH)	LOW
S13-1~13-4	EQ (NORMAL/Fe-Cr/CrO2)	NORMAL
S14-1~14-4	FM DOLBY NR (ON ⎍ /OFF ⎍)	OFF (OFF button is depressed.)

Ref. No.	Switch	Mode
S3-4	timing ("forward" in playback and record modes/"stop" in the other modes.)	stop
S601	solenoid (jointed with the function solenoid. "stop" in stop mode/ON in the other modes.)	stop
S602	counter (ON at "000" indication/OFF at the other indications)	OFF
S603	MEMORY COUNTER (ON/OFF)	OFF
S604	rewind (this switch turns ON only when the rewind button is depressed.)	OFF
S605	PAUSE (2) (this switch turns ON to prevent the stop solenoid operation when the PAUSE button is depressed in playback or record mode.)	OFF
S606	transient ("stable" in stop mode/momentary ON in the other modes.)	stable
S607	function ("stop" in stop mode/ON in the other modes.)	stop
S608	cassette (ON when the tape cassette is inserted.)	OFF

1-2. EXTERNAL VIEW (1)

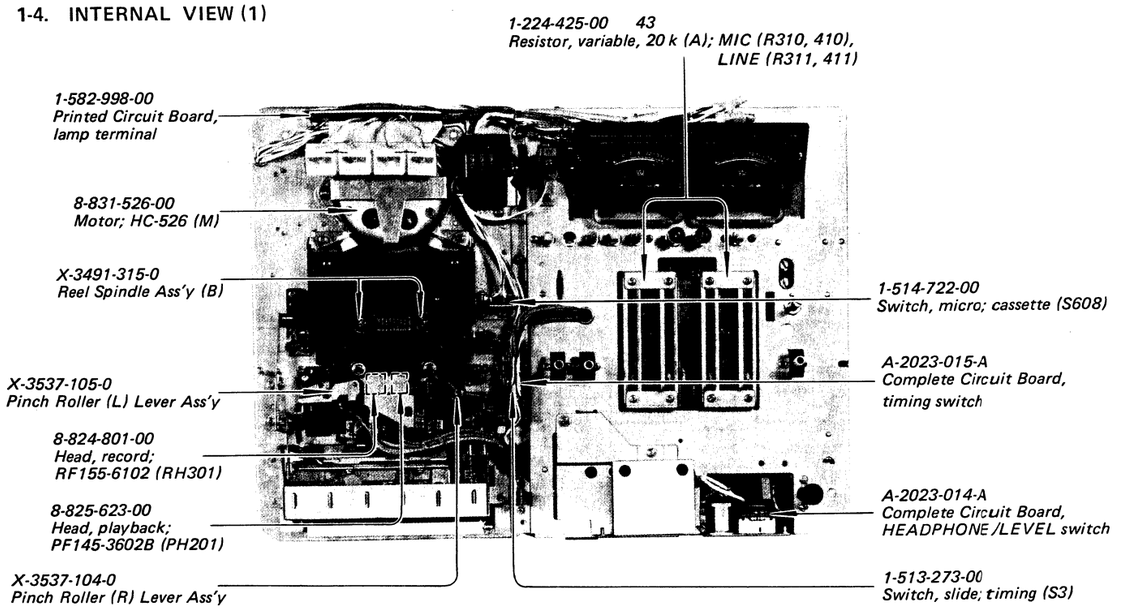


1-3. EXTERNAL VIEW (2)

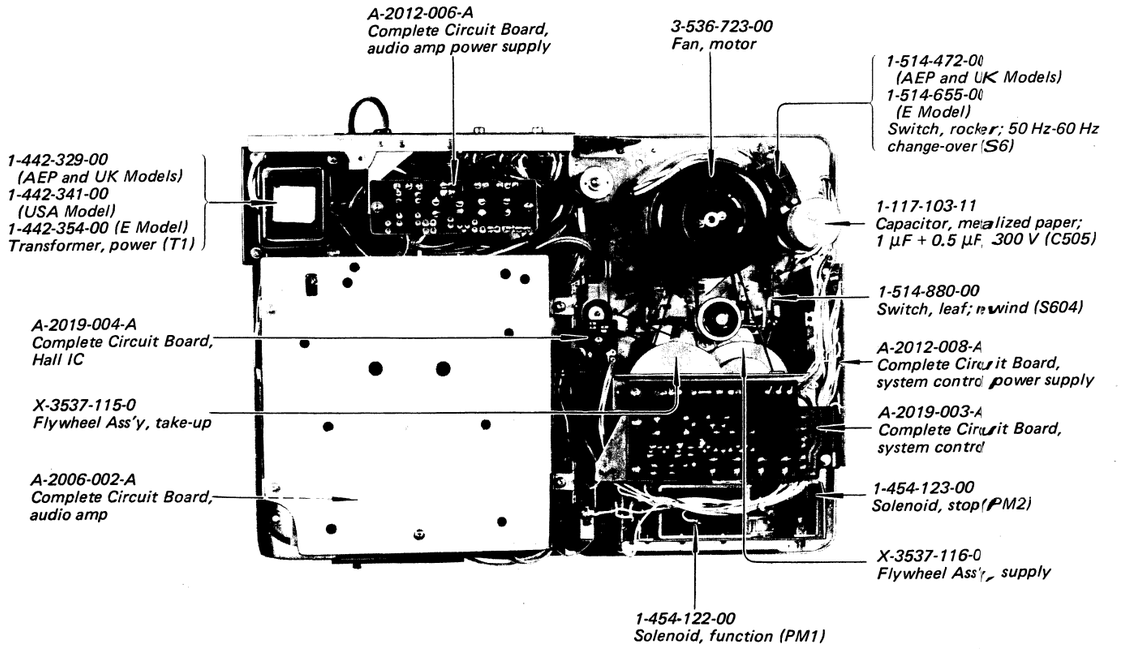


Note: USA Model is shown.

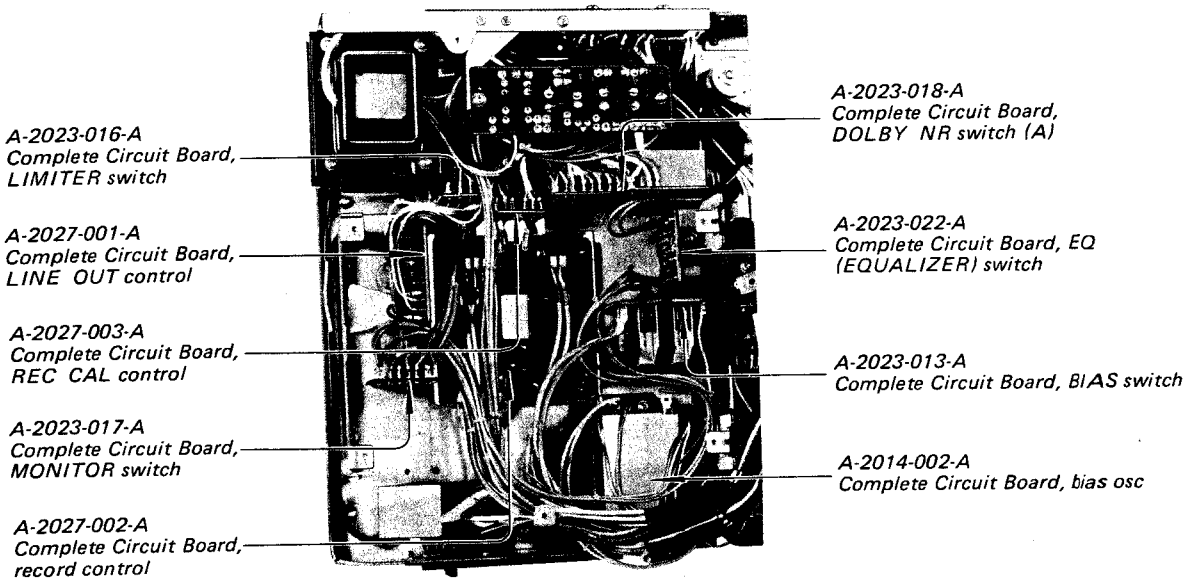
1-4. INTERNAL VIEW (1)



1-5. INTERNAL VIEW (2)



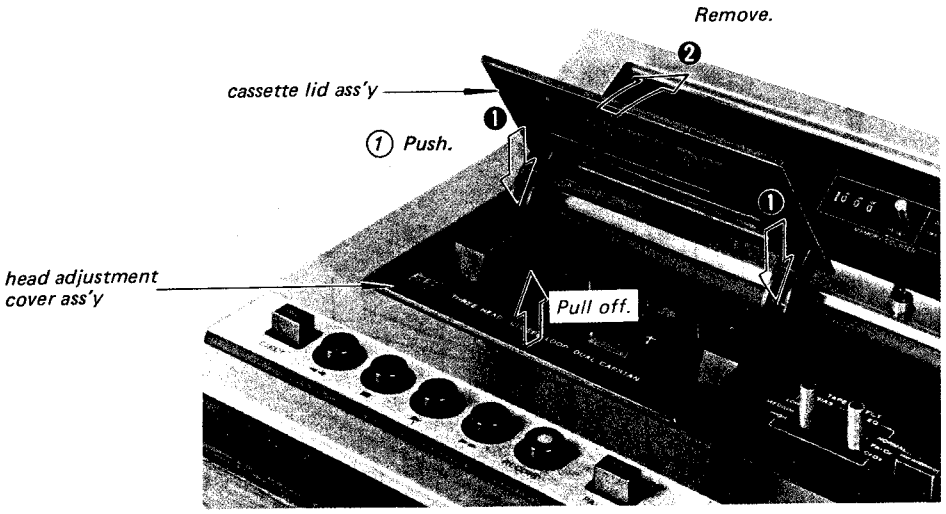
1-6. INTERNAL VIEW (3)



Note: Audio amp circuit board is turned out.

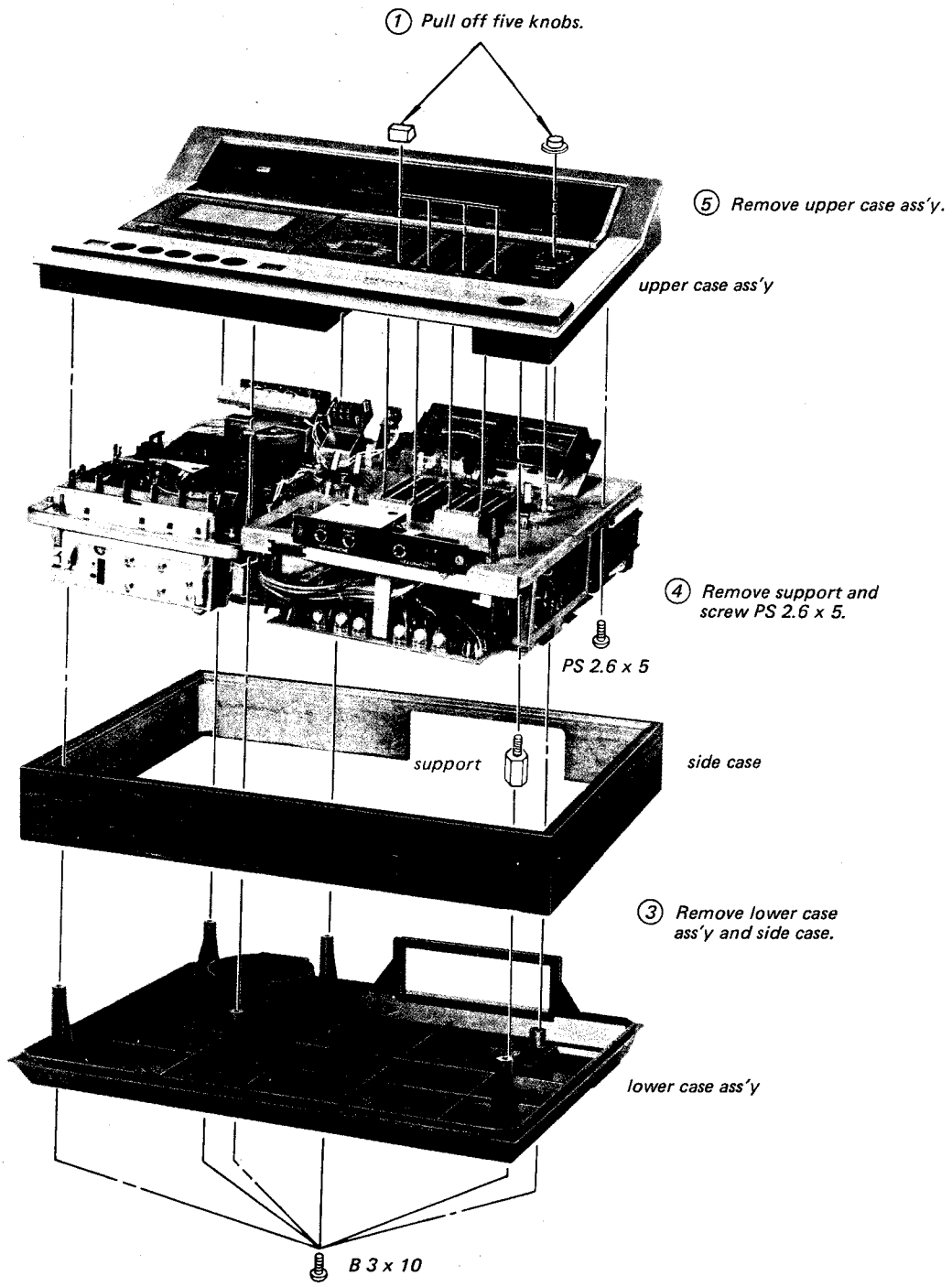
SECTION 2
DISASSEMBLY

2-1. CASSETTE LID ASS'Y REMOVAL



Note: Head azimuth adjustments can be made by pulling off the head adjustment cover ass'y and pressing the forward button.

2-2. CASE REMOVAL


① Pull off five knobs.
⑤ Remove upper case ass'y.
upper case ass'y
④ Remove support and screw PS 2.6 x 5.
PS 2.6 x 5
support
side case
③ Remove lower case ass'y and side case.
lower case ass'y
B 3 x 10

② Remove six screws B 3 x 10.

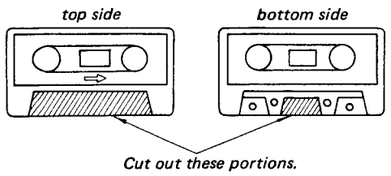
SECTION 3
ADJUSTMENTS

3-1. MECHANICAL ADJUSTMENT (1)

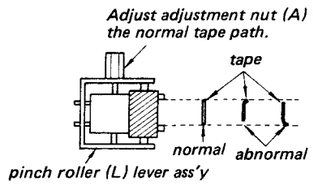
Tape Path Adjustment

1. Prepare an adjustment cassette for this adjustment as follows.

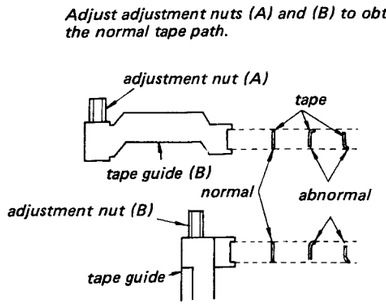
   Tape cassette: SONY C-120



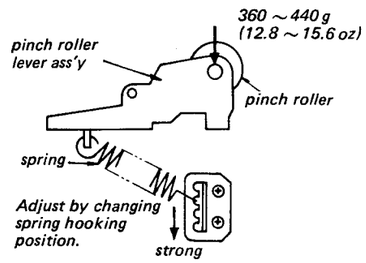
2. Erase Head Height Adjustment:



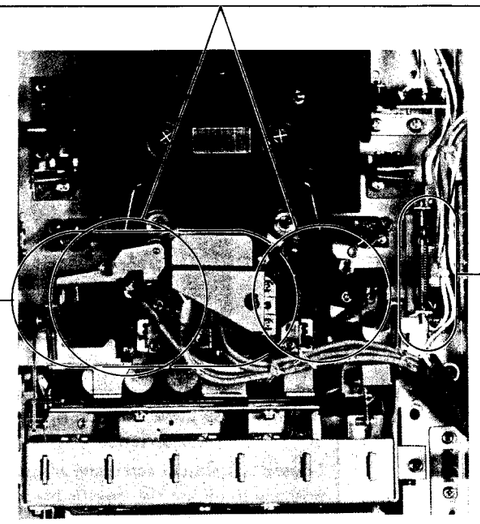
3. Tape Guide Height Adjustment:



Pinch Roller Pressure Measurement
– Playback mode –

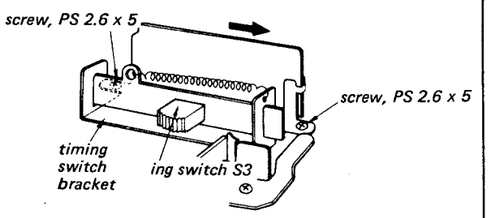


Note: Perform measurement for both pinch roller (L) lever ass'y and pinch roller (R) lever ass'y.



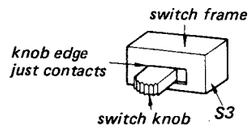
Timing Switch Position Adjustment
– Stop mode –

Loosen two screws, PS 2.6 x 5.



– Playback mode –

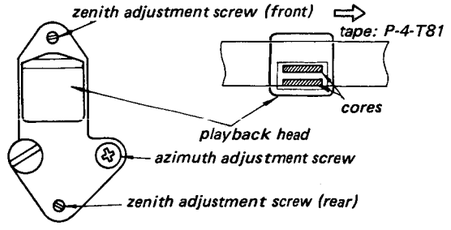
Move the timing switch bracket in the direction shown by the arrow until the switch knob just contacts the switch frame.



Note: Do not move the timing switch bracket excessively. Otherwise, tape touch might be degraded.
After adjustment, assure that the switch turns before the forward button locks.

4. Playback Head Height Adjustment

1) Adjust three adjustment screws to make the bottom edge of the core flush with the bottom edge of the tape.

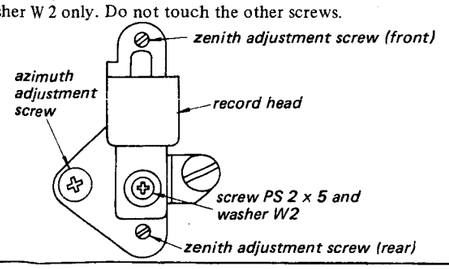


2) Mode: Playback
   Tape: P-4-T81
   Adjust three screws to obtain maximum LINE OUT voltage.

5. Record Head Height Adjustment

Adjust three adjustment screws to obtain maximum LINE OUT voltage by repeating record and playback alternatively.

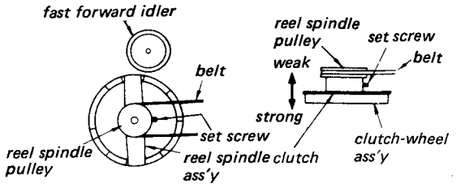
Note: When replacing the record head, remove the screw PS 2 x 5 and washer W 2 only. Do not touch the other screws.


zenith adjustment screw (front)
azimuth adjustment screw
record head
screw PS 2 x 5 and washer W2
zenith adjustment screw (rear)

3-2. MECHANICAL ADJUSTMENT (2)

Forward Torque Adjustment
– Playback mode –

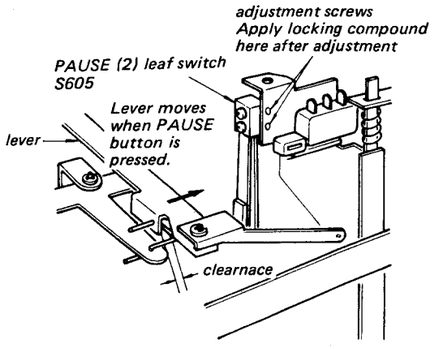
Adjust reel spindle clutch spring position to obtain the specified value.
If necessary, adjust clutch-wheel ass'y position by loosening set screw.



Specification: 45 ~ 60 g·cm
(0.63 ~ 0.83 oz·inch)

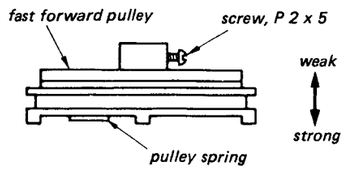
PAUSE (2) Leaf Switch (S605) Position Adjustment

By pressing the PAUSE button, loosen adjustment screws and adjust switch position so that the switch contacts are closed just when the clearance does not exist. Switch leaf edge should bend more than 4 mm ($^5/_{32}$ inch) when the PAUSE button locks.

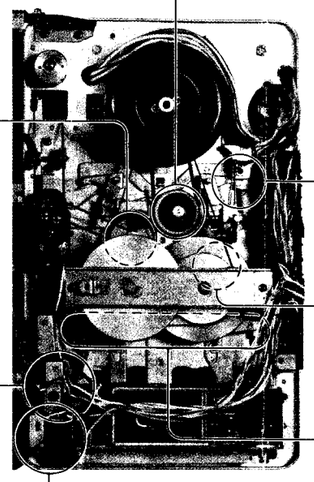


Fast Forward and Rewind Torque Adjustment
– Fast Forward mode –
– Rewind mode –

Adjust fast forward pulley position by loosening screw to obtain the specified values.
If necessary, adjust pulley spring position.



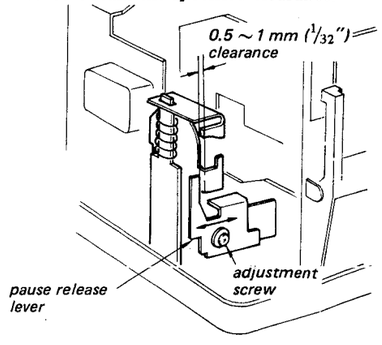
Specification:
Fast Forward mode: 70 g·cm (0.97 oz·inch)
Rewind mode: 80 g·cm (1.11 oz·inch)



Note: Photograph is the USA Model.

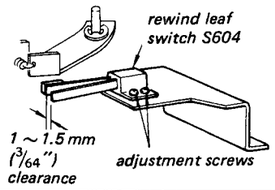
Pause Release Lever Position Adjustment
– Stop mode –

Loosen adjustment screw and adjust pause release lever position to obtain the specified clearance.



After adjustment, assure that the stop button releases locked PAUSE button. Apply locking compound to adjustment screw after adjustment.

Rewind Leaf Switch (S604) Position Adjustment
– Stop mode –

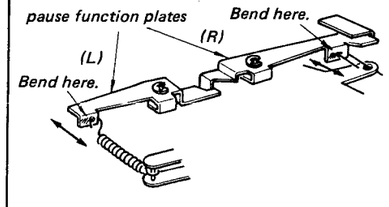


– Rewind mode –

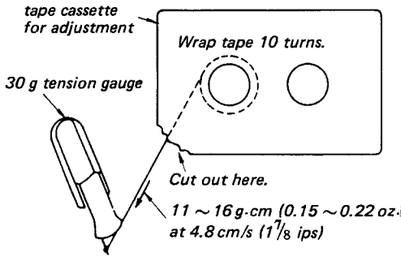
Loosen adjustment screws and adjust switch position so that the edge of leaf bends 4 ~ 6 mm ($^5/_{32}$ ~ $^1/_4$ inch) until rewind button is locked after the switch contacts have been just closed.

PAUSE Timing Adjustment
– Playback mode (cassette switch S608 ON) –

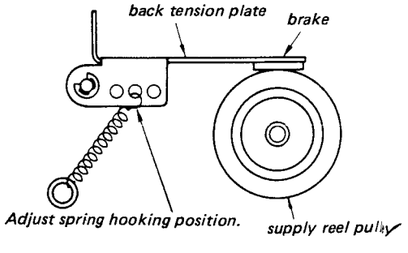
Adjust by bending the specified portions of pause function plates (L) and (R) to obtain proper timing.
Gradually press the PAUSE button, and take-up reel spindle should cease rotating after left-side and right-side pinch rollers released.
Left-side and right-side pinch rollers should release at the same time or left-side pinch roller should release faster.



Back Tension Torque Adjustment
– Playback and PAUSE modes –



Unplug power cord and adjust spring hooking position to obtain the specified value.



3-3. ELECTRICAL ADJUSTMENTS AND MEASUREMENTS

PRECAUTION

1. Clean the following parts with an alcohol moistened swab:
   * record and playback heads * pinch rollers
   * erase head * rubber belts
   * capstans * idlers
2. Demagnetize record and playback heads with a head demagnetizer.
3. Do not use magnetized screwdriver for adjustments.
4. After adjustments, apply a small amount of locking compound to the parts adjusted.
5. Adjustments should be performed in the order arranged in this service manual.
6. Adjustments and measurements should be performed for both L-CH and R-CH with rated power supply voltage unless otherwise specified.
7. Record and playback level adjustments should be carefully performed.

Test Equipment/Tools Required:

audio oscillator (af osc)
VTVM
digital frequency counter
speed checker SONY LMF-30
oscilloscope
bandpass filters (400 Hz, 1 kHz, 10 kHz)
attenuator (600 Ω)
non-magnetic screwdriver
resistors . . . 6 Ω (¼ W), 8 Ω (¼ W), 300 Ω (¼ W), 594 Ω (¼ W, 600 Ω and 60 kΩ in parallel), 600 Ω (¼ W), 10 kΩ (¼ W), 80 kΩ (¼ W), 100 kΩ (¼ W)
blank tapes (completely erased with bulk eraser)
SONY CS-10 (HF), CS-20 (CrO_2), CS-30 (Fe-Cr)

BIAS and EQ switch settings in accordance with tape used are as follows.

Tape	BIAS switch	EQ switch
CS-10	LOW	NORMAL
CS-20	HIGH	CrO_2
CS-30	LOW	Fe-Cr

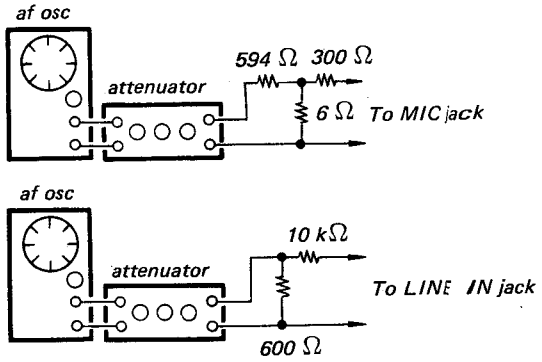
SONY test tapes
P-4-A81S (6.3 kHz, −10 dB)
P-4-A82 (10 kHz, −10 dB)
P-4-L81 (333 Hz, 0 dB)
SPC-4 (1 kHz, 0 dB)

Switches and controls should be set as follows unless otherwise specified.

FILTER switch:	OFF
FM DOLBY NR switch:	OFF
DOLBY NR switch:	OFF
CAL TONE switch:	OFF
REC CAL control:	mechanical mid
LIMITER switch:	OFF
LINE OUT control:	MAX
MONITOR switch:	(SOURCE (record mode) / TAPE (playback mode)
LINE/MIC controls:	MIN
EQ switch:	NORMAL
BIAS switch:	LOW
TAPE SELECT EQ switch:	NORMAL

Test Equipment Connections:

Input side:



Standard Record:

Deliver the specified input signal level to the input jack and set the MIC or LINE control to obtain the specified output signal level. Set the LINE control to MIN when MIC IN is used or set MIC control to MIN when LINE IN is used.

Standard Input Level

	MIC IN	LINE IN
source impedance	300 Ω	10 kΩ
input level	−60 dB (0.77 mV)	−10 dB (0.25 V)

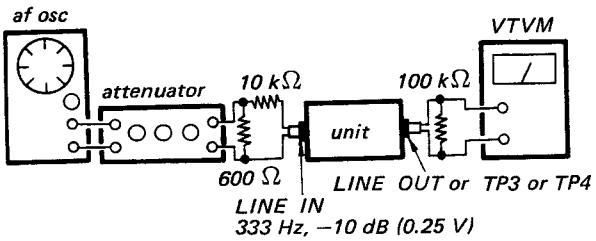
Standard Output Level

	LINE OUT	HEADPHONE
load impedance	100 kΩ	8 Ω
output level	0 dB (0.775 V)	LEVEL 1: −32 dB (19 mV) LEVEL 2: −22 dB (62 mV)

1. Monitor Level Adjustment

Procedure:

1. Mode: Standard record (See page 13.)

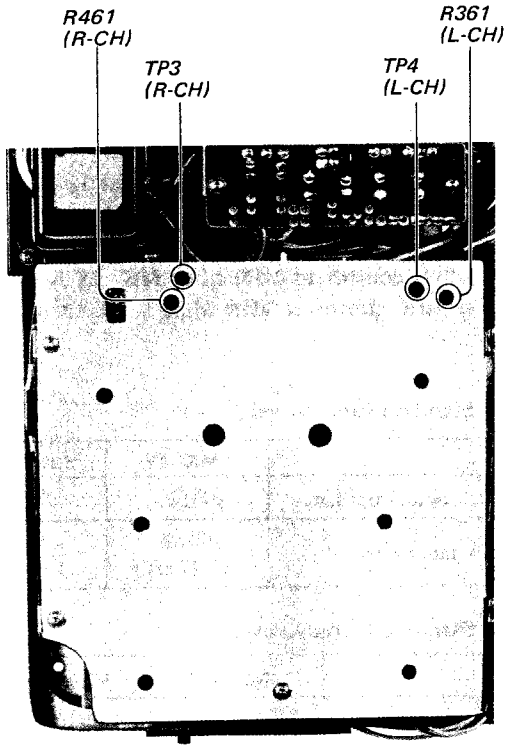


2. Adjust LINE control to obtain 0 dB (0.775 V) at TP3 and TP4.
3. Adjust R361 (L-CH) and R461 (R-CH) to obtain 0 dB (0.775 V) at LINE OUT.

Specification:

Level difference between channels:
less than 0.5 dB

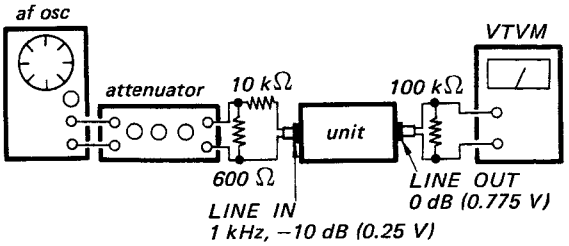
Adjustment Location:



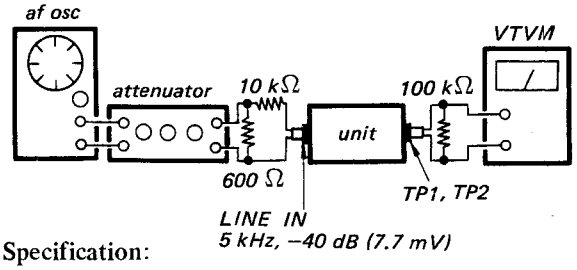
2. Record DOLBY Adjustment

Procedure:

1. Mode: Standard record (See page 13.)



2. Mode: Record
DOLBY NR switch: ON and OFF



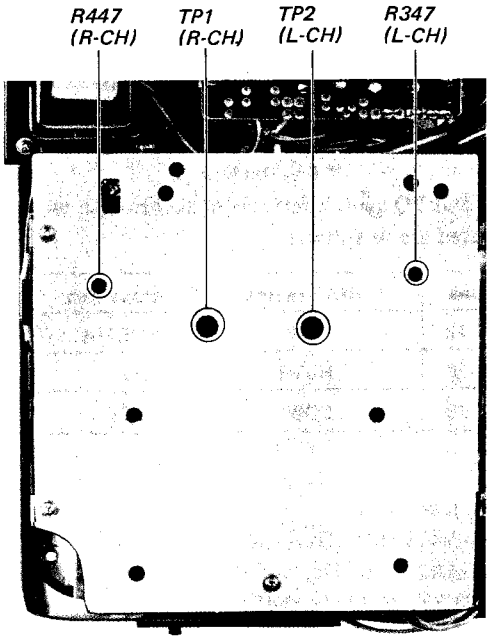
Specification:

DOLBY NR switch	VTVM reading difference
ON	8 dB ± 0.5 dB
OFF	

Level difference between channels:
less than 0.5 dB

If necessary, adjust R347 (L-CH) and R447 (R-CH) to obtain the specified value.

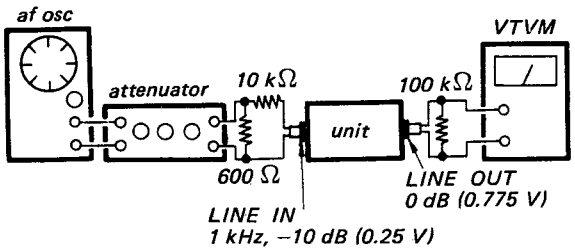
Adjustment Location:



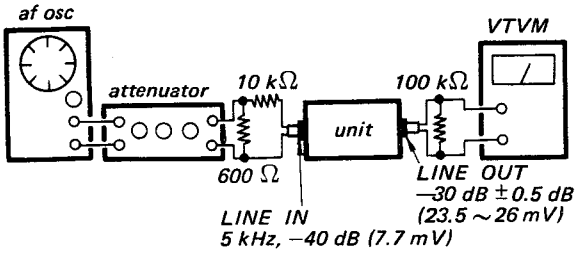
3. Playback DOLBY Adjustment

Procedure:

1. Mode: Standard record (See page 13.)



2. Mode: Record
   DOLBY NR switch: ON



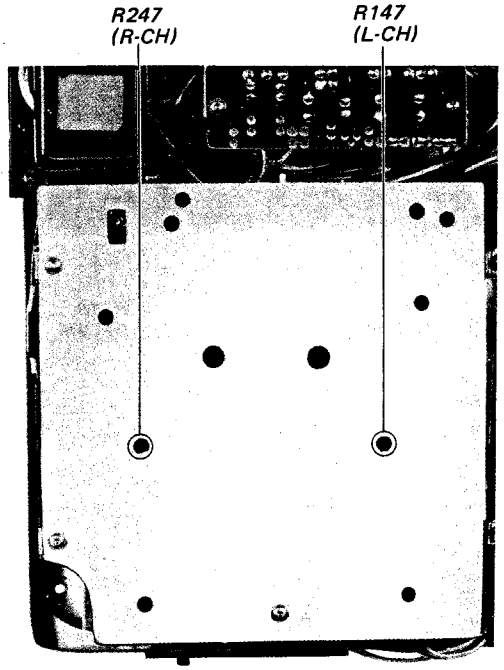
Adjust R147 (L-CH) and R247 (R-CH) to obtain the specified value.

Specification:

LINE OUT level: −30 dB ± 0.5 dB (23.5 ~ 26 mV)

Level difference between channels: less than 0.5 dB

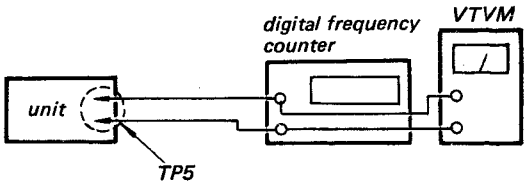
Adjustment Location:



4. CAL TONE Level Adjustment and Osc Frequency Check

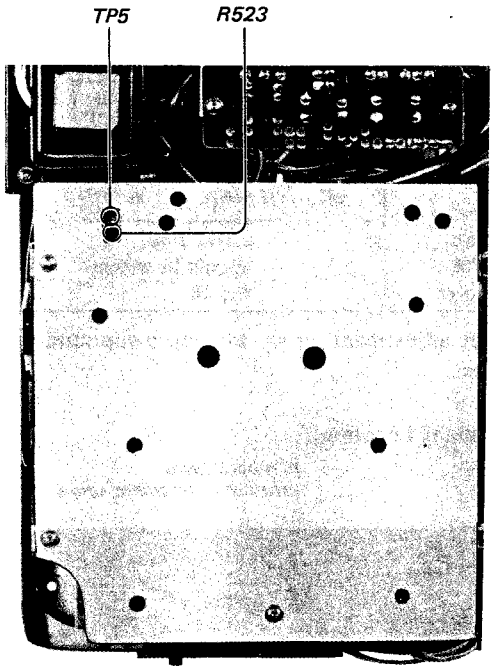
Procedure:

1. CAL TONE switch: ON



2. Adjust R523 to obtain −37 dB ± 0.3 dB (10.5 ~ 11.3 mV) VTVM reading.
3. Digital frequency counter reading should be 370 Hz ~ 430 Hz.

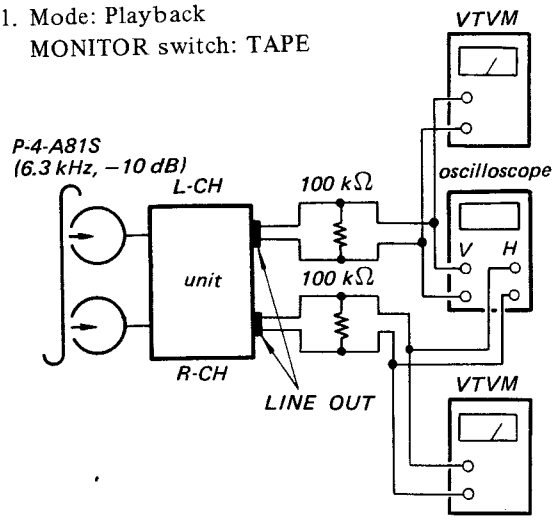
Adjustment Location:



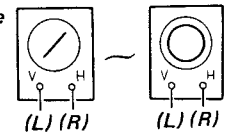
5. Playback Head Azimuth Adjustment

Procedure:

1. Mode: Playback
   MONITOR switch: TAPE

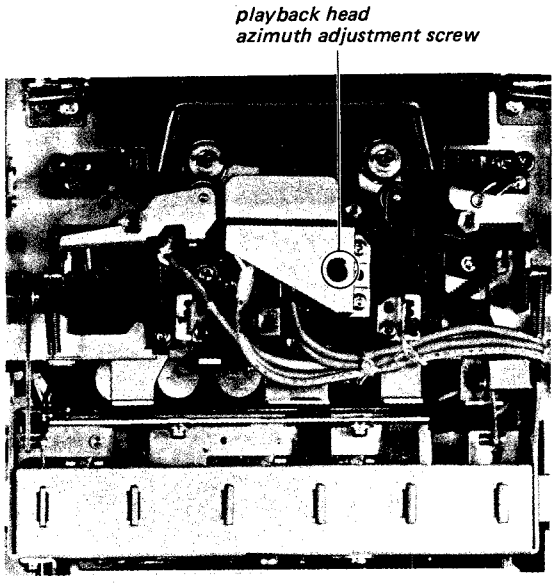


2.

Adjust	Oscilloscope patterns
azimuth adjustment screw to obtain the in-phase pattern around the highest VTVM readings.	[Allowance] *in-phase*  *90° out-of-phase* (L) (R) (L) (R) Level drop should be within 0.5 dB

3. After adjustment, apply locking compound to the screw.

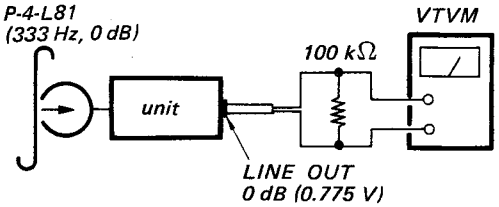
Adjustment Location:



6. Playback Level Adjustment

Procedure:

1. Mode: Playback
   MONITOR switch: TAPE



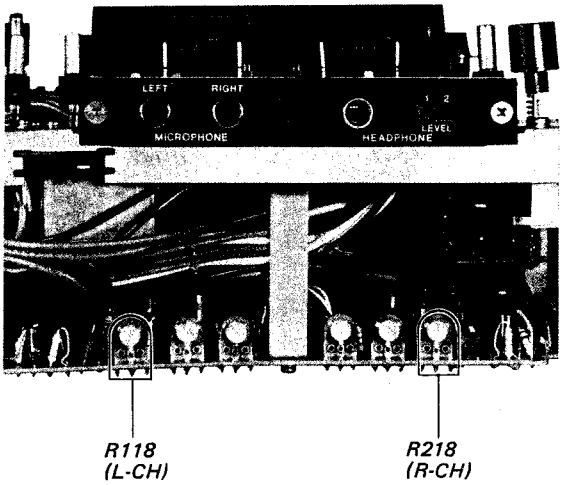
   Adjust R118 (L-CH) and R218 (R-CH) to obtain 0 dB (0.775 V) VTVM reading.

2. Assure that the LINE OUT level does not change when the mode is changed from playback to stop several times.

Specification:

LINE OUT level: 0 dB ± 0.5 dB (0.74 ~ 0.82 V)
Level difference between channels: less than 0.5 dB

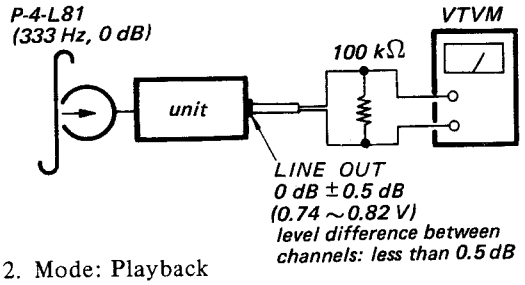
Adjustment Location:



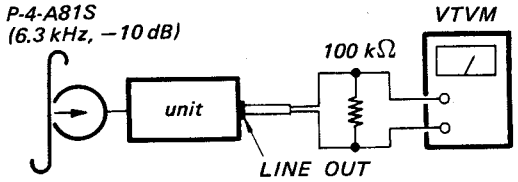
7. Playback Equalizer Adjustment

Procedure:

1. Mode: Playback
   MONITOR switch: TAPE



2. Mode: Playback



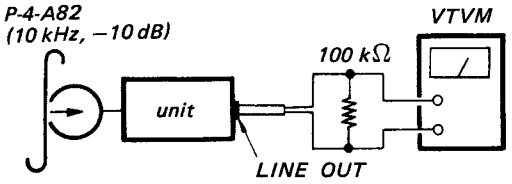
   1) TAPE SELECT EQ switch: Fe-Cr
   Adjust R115 (L-CH) and R215 (R-CH) to obtain the LINE OUT voltage 16.0 dB lower than that obtained in step 1 above.

   Specification: 15.5 ~ 16.5 dB lower

   2) TAPE SELECT EQ switch: NORMAL
   Adjust R116 (L-CH) and R216 (R-CH) to obtain the LINE OUT voltage 11.5 dB lower than that obtained in step 1 above.

   Specification: 11.0 ~ 12 dB lower

3. Mode: Playback

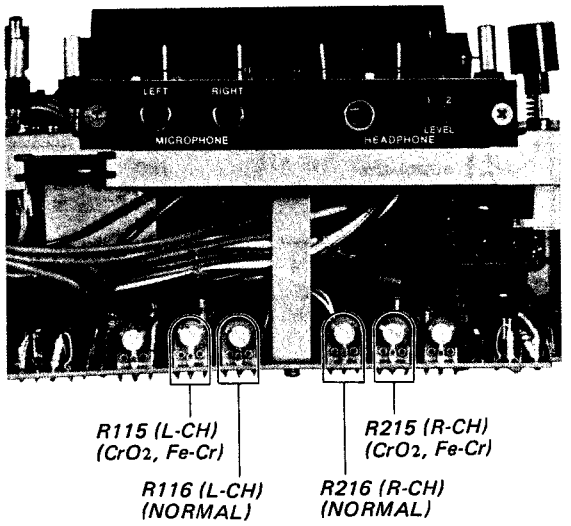


   TAPE SELECT EQ switch: NORMAL
   Assure that the LINE OUT voltage is 11.5 dB lower than that obtained in step 1 above.

   Specification: 13.5 ~ 9.5 dB lower

   level difference between channels: less than 2 dB

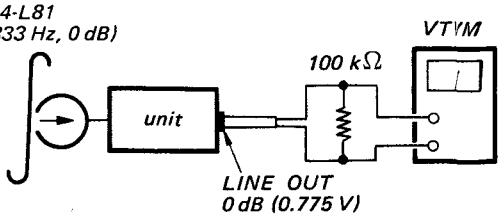
Adjustment Location:



8. Playback Signal-to-Noise Ratio Measurement

Procedure:

1. Mode: Playback
   MONITOR switch: TAPE



2. Mode: Playback
   PAUSE button: pressed
   TAPE SELECT EQ switch: NORMAL, CrO_2 or Fe-Cr
   Measure noise level at LINE OUT.

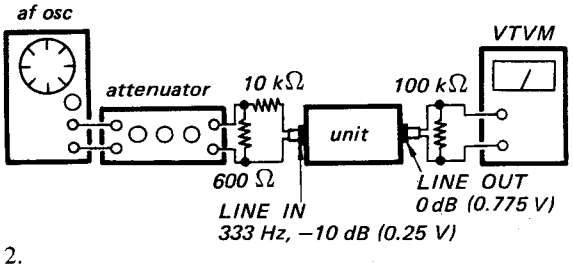
Specification:

TAPE SELECT EQ switch	Signal-to-Noise Ratio
NORMAL	More than 49.0 dB
CrO_2 Fe-Cr	More than 51.0 dB

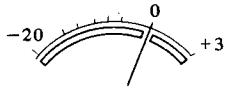
9. VU Meter Calibration

Procedure:

1. Mode: Standard record (See page 13.)



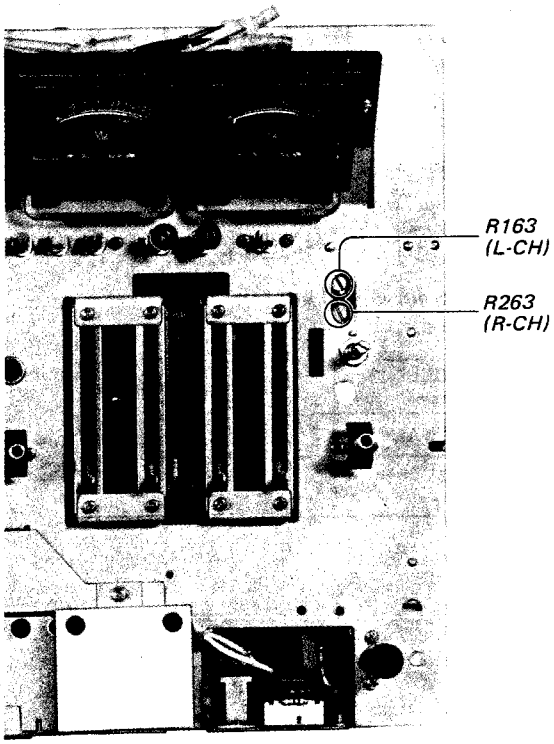
2.

Adjust	VU meter reading: 0 VU
R163 (L-CH) R263 (R-CH)	

Specification:

When the LINE IN level is adjusted to make 0 VU indication, VTVM reading should be −0.5 ~ +0.5 dB (0.74 ~ 0.82 V)

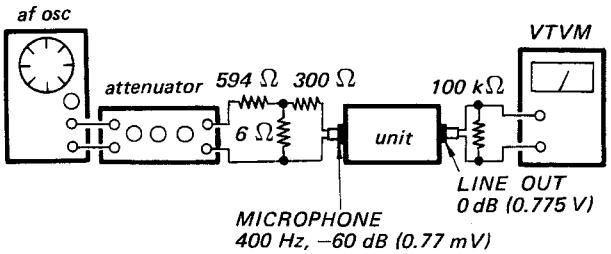
Adjustment Location:



10. LIMITER Operation Check

Procedure:

1. Mode: Standard record (See page 13.)



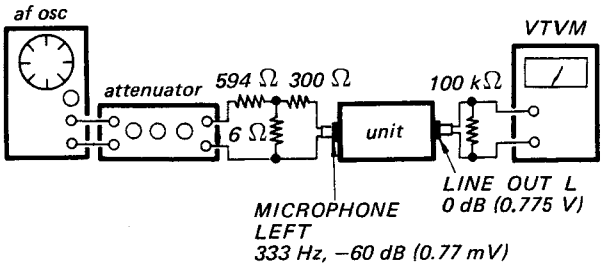
2. LIMITER switch: ON

MICROPHONE	LINE OUT
−60 dB (0.77 mV)	−1.5 ~ +0.5 dB (0.66 ~ 0.82 V)
−30 dB (25 mV)	+3 ~ +6 dB (1.1 ~ 1.6 V)

11. MIC Control Balance Check

Procedure:

1. Mode: Standard record (See page 13.)

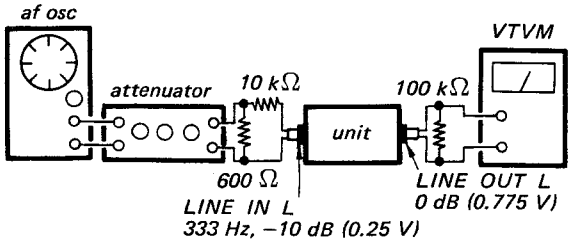


2. Connect input signal to MICROPHONE RIGHT and VTVM to LINE OUT R.
3. Set the MIC (R) control to the same position as that of the MIC (L) control.
   Output level difference from L-CH should be less than 3 dB.

12. LINE Control Balance Check

Procedure:

1. Mode: Standard record (See page 13.)

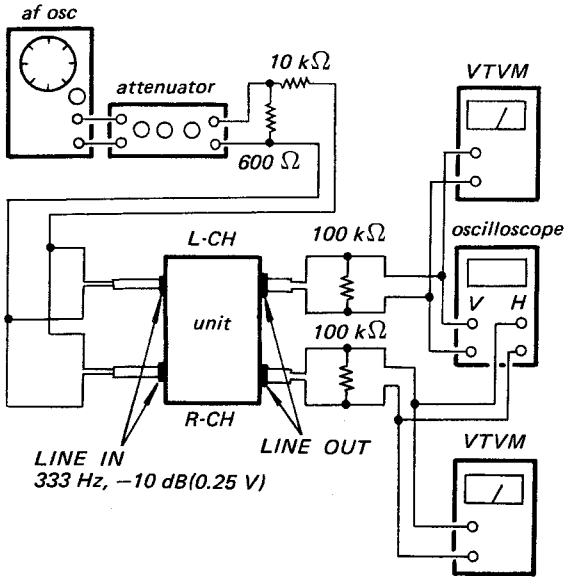


2. Connect input signal to LINE IN R and VTVM to LINE OUT R.
3. Set the LINE R control to the same position as that of the LINE L control.
   Output level difference from L-CH should be less than 3 dB.

13. Record Head Azimuth Adjustment

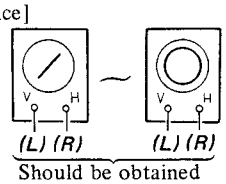
Procedure:

1. Mode: Standard record (See page 13.)



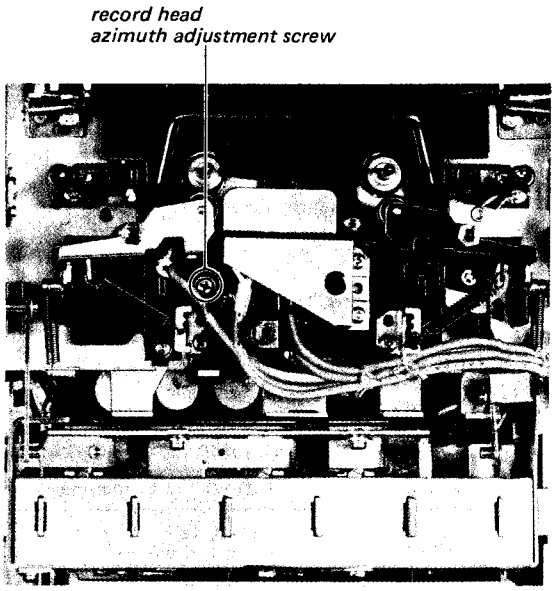
REC CAL controls: Mechanical mid

2. Mode: Record
   Apply 10 kHz, −40 dB (7.7 mV) signal to the LINE IN L and R, and carefully adjust record head azimuth adjustment screw to obtain highest VTVM readings.

Adjust	Oscilloscope patterns
azimuth adjustment screw to obtain the in-phase pattern at maximum VTVM readings.	[Allowance] *in-phase*  *90° out-of-phase* (L) (R) (L) (R) Should be obtained at less than 1 dB level difference between channels.

Note: Do not adjust playback head adjustment screw.

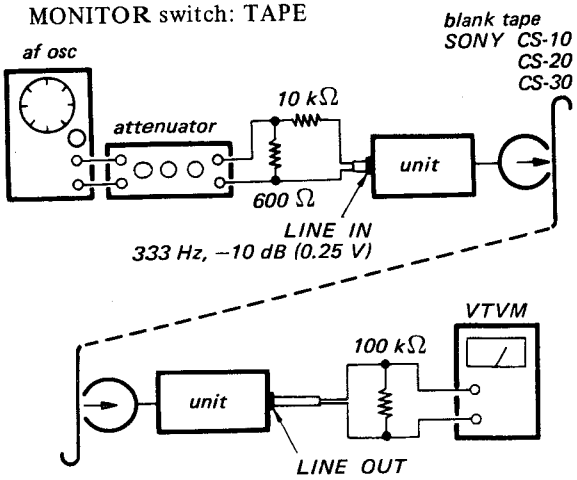
Adjustment Location:



14. Record Level Adjustment

Procedure:

1. Mode: Standard record and simultaneous playback
   MONITOR switch: TAPE



   Adjust REC CAL controls R364 (L-CH) and R464 (R-CH) to obtain 0 dB (0.775 V) VTVM reading.

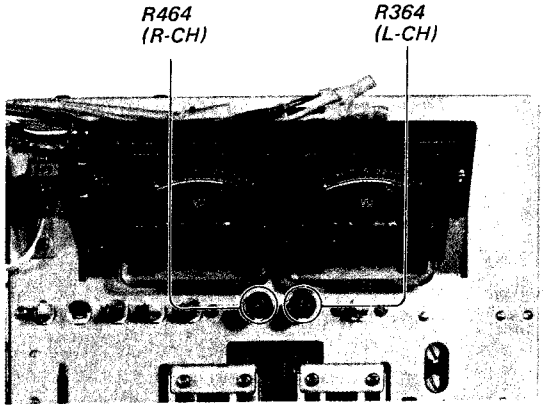
   Note: Do not adjust these controls after this adjustment.

2. Change the blank tape to CS-20 and CS-30, and perform the same record and playback procedure. Measure LINE OUT level.

Specification:

SONY tape	LINE OUT level
CS-10	0 dB (0.775 V, reference)
CS-20	−1 ~ 0 dB (0.69 ~ 0.775 V)
CS-30	−1 ~ +1 dB (0.69 ~ 0.85 V)

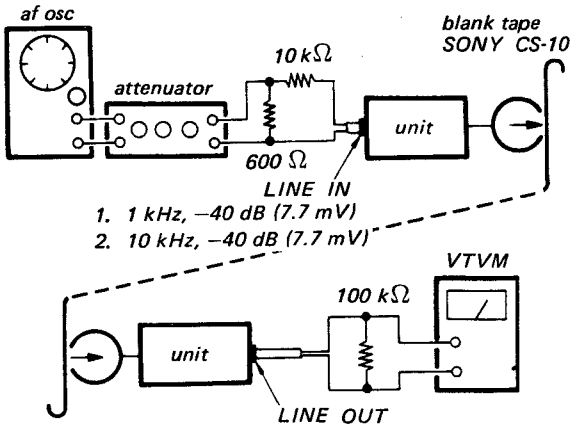
Adjustment Location:



15. Record Bias Adjustment

Procedure:

1. Mode: Record and simultaneous playback
   MONITOR switch: TAPE
   LINE control: standard record position



   Note LINE OUT level with 1 kHz input signal.

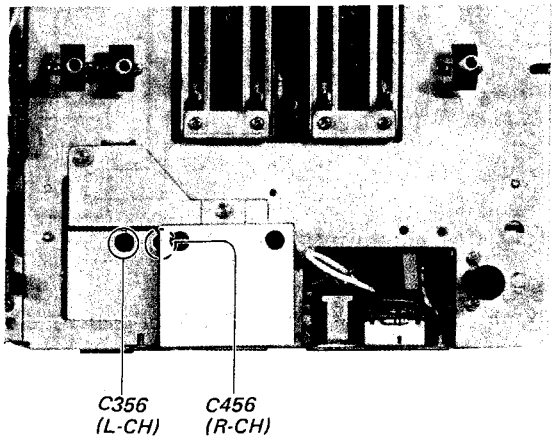
2. With 10 kHz input signal, adjust C356 (L-CH) and C456 (R-CH) to obtain output signal 0.5 dB lower than that obtained in step 1.
   When these adjustments are turned clockwise, higher-frequency-component output level drops.

3. Set the BIAS switch to MEDIUM and assure that the 10 kHz output level drops.

Specification:

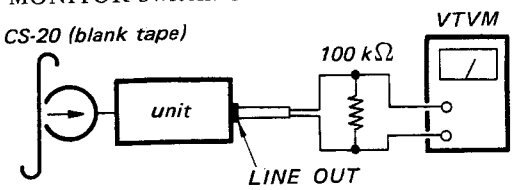
10 kHz LINE OUT level drop from 1 kHz
LINE OUT level: 1 dB maximum
Level difference between channels:
less than 0.5 dB

Adjustment Location:



16. Playback Trap Adjustment

Procedure:
Mode: Playback
MONITOR switch: TAPE

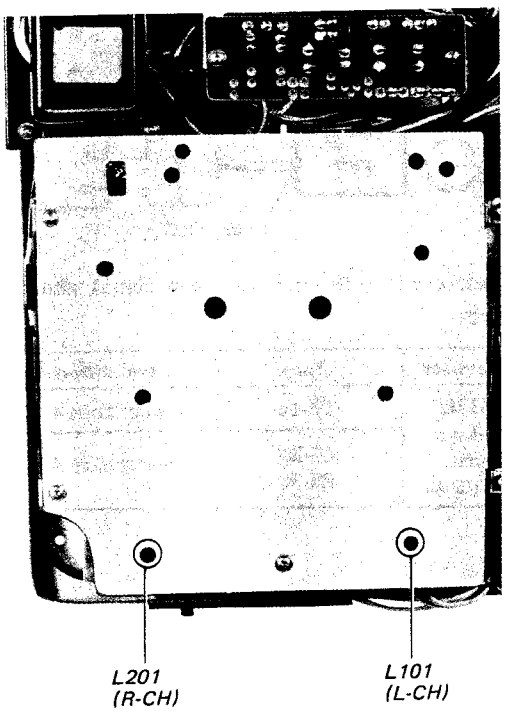


Adjust L101 (L-CH) and L201 (R-CH) to obtain minimum LINE OUT voltage.

Note: VTVM should be able to handle frequency higher than 150 kHz.

Specification: −45 dB (4.4 mV) or lower

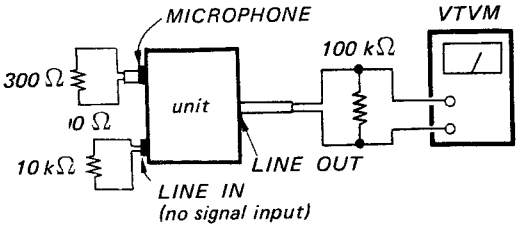
Adjustment Location:



17. Bias Leakage Measurement

Procedure:

1. Mode: Record



Note: Be sure not to pick up hum noise at the dummy resistors and input jacks.
Do not use shielded wire for VTVM connection.

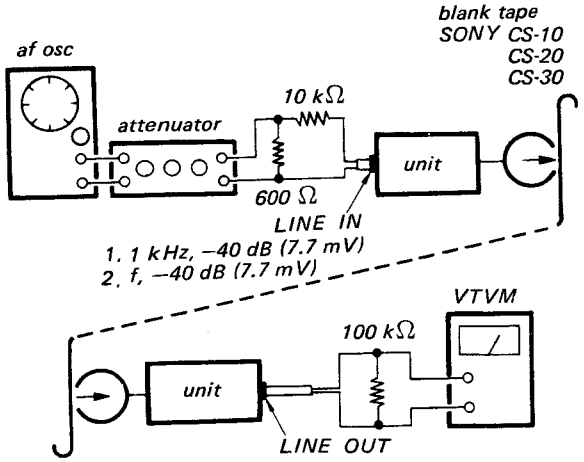
Adjust LINE control from MIN to MAX and measure the maximum level.

Specification: −45 dB (4.4 mV) or lower

18. Overall Frequency Response Measurement

Procedure:

1. Mode: Record and simultaneous playback
   MONITOR switch: TAPE
   LINE control: standard record position



2. Measure LINE OUT level difference from that of 1 kHz output level.

Tape \ f	Level difference				
	30 Hz *	7 kHz	10 kHz	12.5 kHz	15 kHz
CS-10	$^{+1}_{-3}$ dB *	± 1 dB	$^{+0}_{-1}$ dB	$^{+1}_{-3}$ dB	
CS-20	$^{+1}_{-3}$ dB *	± 1 dB			± 3 dB
CS-30	$^{+1}_{-3}$ dB *	± 1 dB			± 3 dB

* With 40 Hz: $^{+1}_{-2}$ dB

3. DOLBY NR switch: ON
   In the same manner, measure LINE OUT level difference.

Tape \ f	Level difference	
	7 kHz	10 kHz
CS-10	± 3 dB	± 3 dB
CS-20	± 3 dB	± 3 dB
CS-30	± 3 dB	± 4 dB

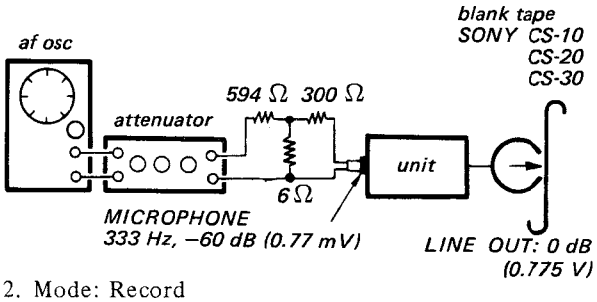
4. When the above specified values are not obtained, adjust record bias slightly or adjust playback equalizer level by ± 1 dB at CrO_2 switch position, and repeat the measurement.

Note: When playback equalizer level at CrO_2 is adjusted in this step, also readjust playback equalizer level at NORMAL position.

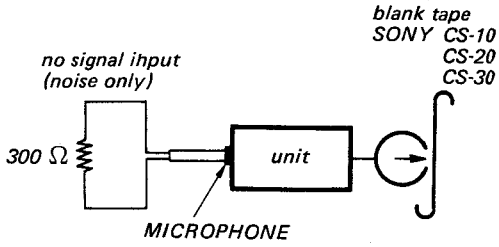
19. Overall Signal-to-Noise Measurement

Procedure:

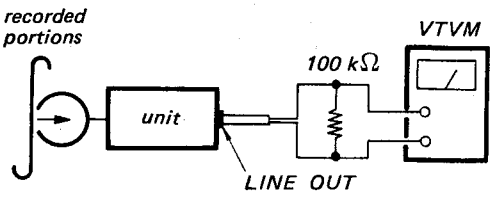
1. Mode: Standard record



2. Mode: Record



3. Mode: Playback



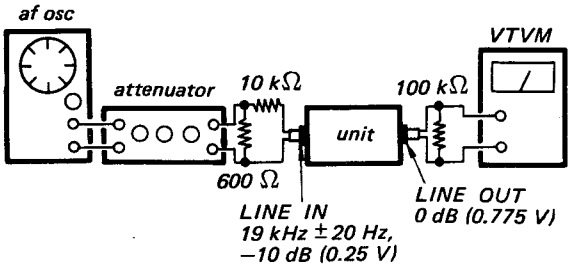
Measure the difference between signal and noise levels.

Playback	Tape	Level difference
333 Hz and no signal portions	CS-10	greater than 40 dB
	CS-20, CS-30	greater than 47 dB

20. 19 kHz Filter Measurement

Procedure:

1. Mode: Standard record



2. Mode: Standard record
   DOLBY NR switch: ON
   FILTER switch: ON

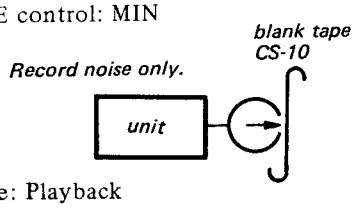
   Measure LINE OUT level.

   Specification: lower than −20 dB (77 mV)

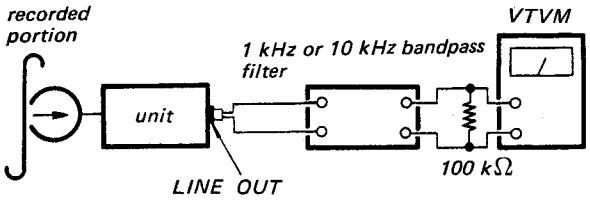
21. DOLBY Signal-to-Noise Ratio Measurement

Procedure:

1. Mode: Record
   LINE control: MIN



2. Mode: Playback
   DOLBY NR switch: ON and OFF
   LINE control: MIN
   MONITOR switch: TAPE



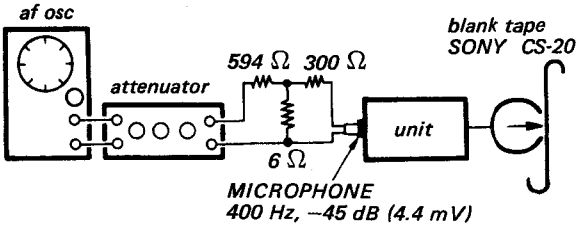
Measure level difference by switching the DOLBY NR switch ON and OFF.

bandpass filter	DOLBY signal-to-noise ratio improvement
1 kHz	more than 4 dB
10 kHz	more than 8 dB

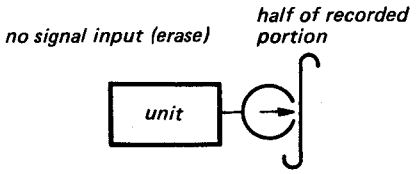
22. Erase Ratio Measurement

Procedure:

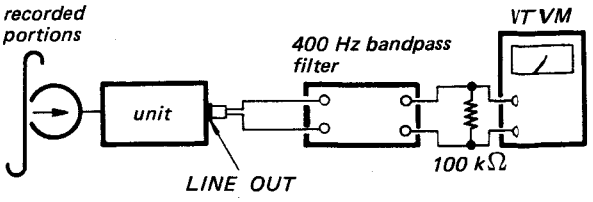
1. Mode: Record
   MIC control: standard record position



2. Rewind half of recorded portion.
3. Set the MIC control to MIN position.
4. Mode: Record



5. Mode: Playback



Measure level difference.

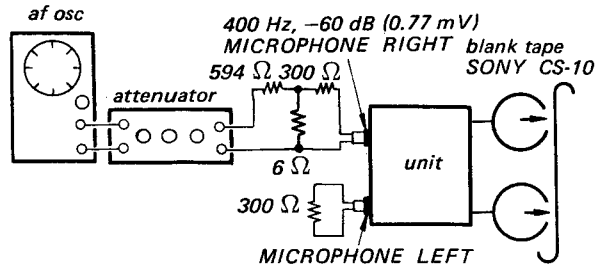
Playback	VTVM reading
400 Hz	level difference: more than 60dB
erased portion	

Note: When a 1 kHz bandpass filter is used, use 1 kHz signal. In case of 1 kHz system the level difference is more than 65 dB.

23. Cross Talk Measurement (between channels)

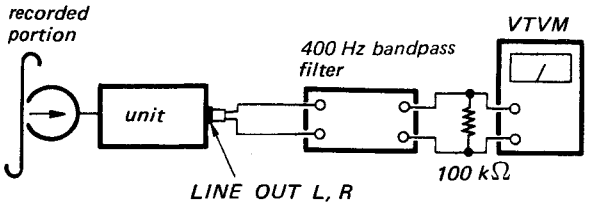
Procedure:

1. Mode: Standard record



Set MIC (L) control to the same as MIC (R) control position for standard recording.

2. Mode: Playback

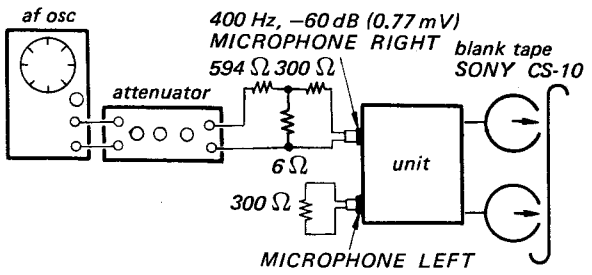


Playback	VTVM reading
R-CH (400 Hz)	level difference: more than 30 dB
L-CH (no signal)	

24. Cross Talk Measurement (between tracks)

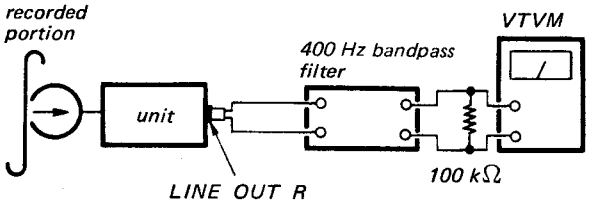
Procedure:

1. Mode: Standard record



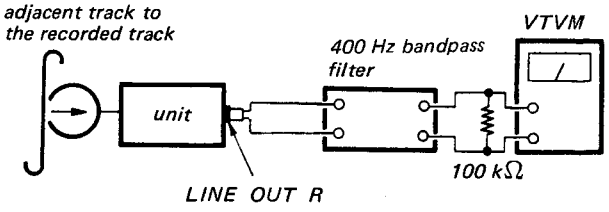
Set MIC (L) control to the same as MIC (R) control position for standard recording.

2. Mode: Playback



3. Turn the cassette over.

4. Mode: Playback

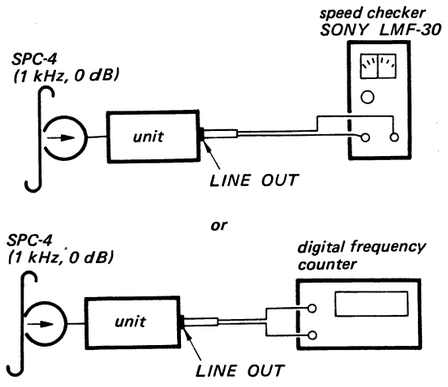


Playback	VTVM reading
400 Hz	level difference: more than 60 dB
adjacent track to recorded track	

25. Tape Speed Measurement

Procedure:

Mode: Playback
LINE OUT control: Mechanical mid



Specification:

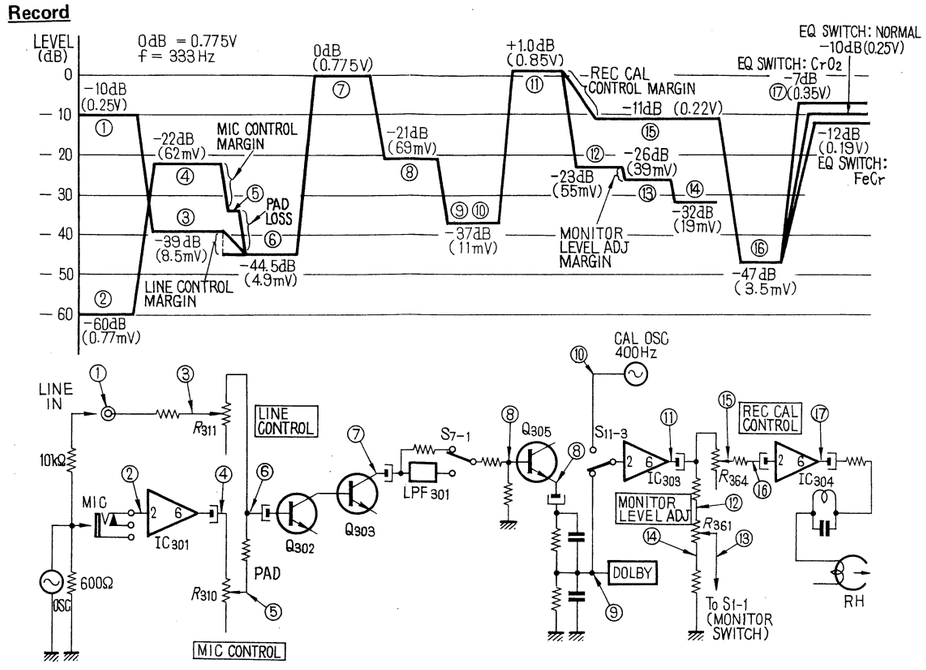
speed checker	digital frequency counter
−1 ~ +1 %	990 ~ 1010 Hz

Frequency difference between beginning and end of tape should be within 1 % (10 Hz).

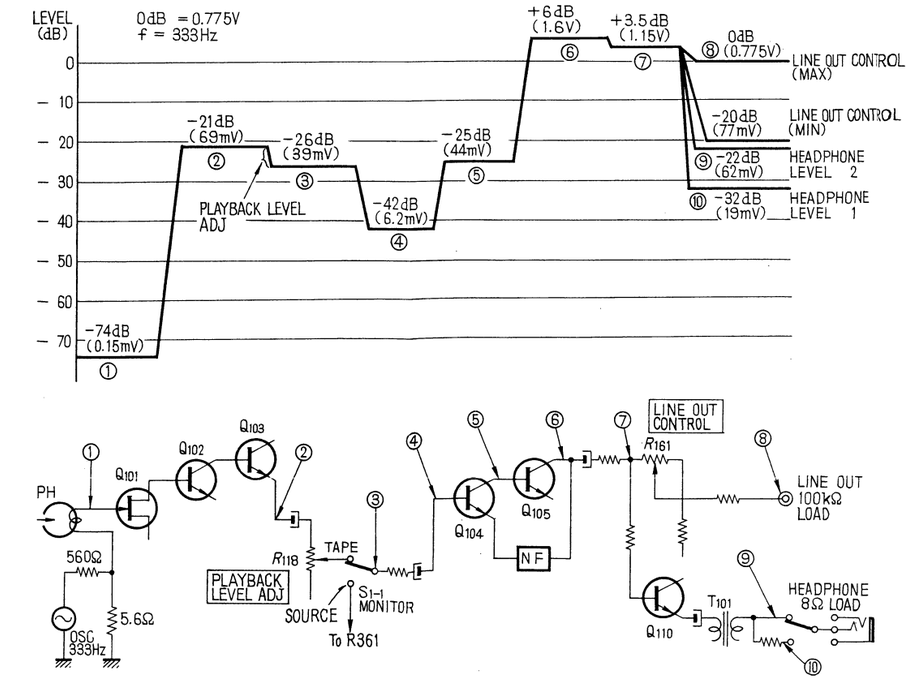
SECTION 4
DIAGRAMS

4-1. LEVEL DIAGRAMS

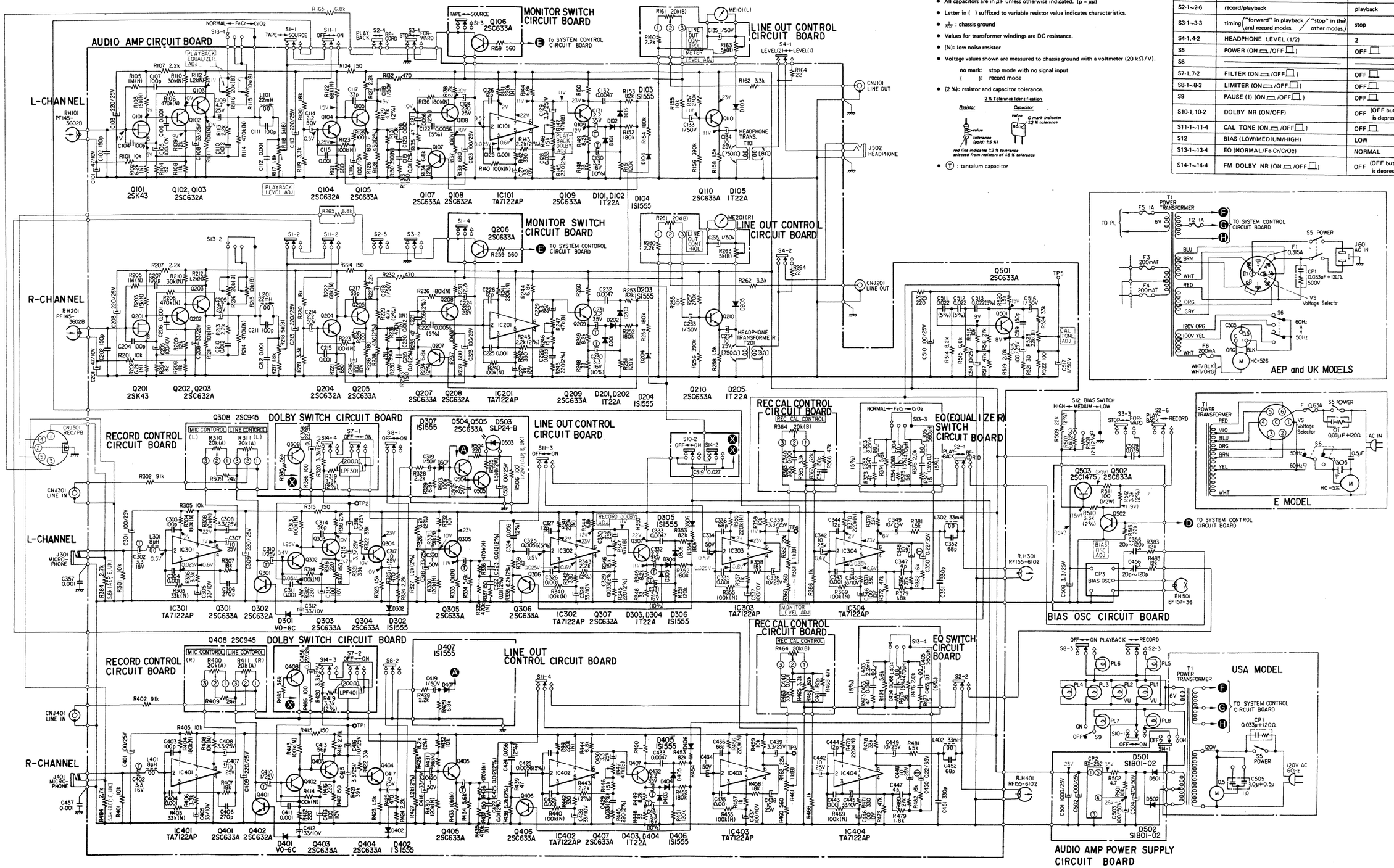
Record



Playback



4-2. SCHEMATIC DIAGRAM (1)



Note:

- All resistors are in Ω, ¼W and carbon type unless otherwise indicated. (k = 1000)
- All capacitors are in μF unless otherwise indicated. (p = μμ)
- Letter in ( ) suffixed to variable resistor value indicates characteristics.
- ⏚ : chassis ground
- Values for transformer windings are DC resistance.
- (N): low noise resistor
- Voltage values shown are measured to chassis ground with a voltmeter (20 kΩ/V).
  - no mark: stop mode with no signal input
  - ( ): record mode
- (2 %): resistor and capacitor tolerance.

2 % Tolerance Identification

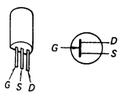
- (T) : tantalum capacitor

Ref. No.	Switch	Mode
S1-1~1-4	MONITOR (SOURCE/TAPE)	TAPE
S2-1~2-6	record/playback	playback
S3-1~3-3	timing ("forward" in playback and record modes. / "stop" in the other modes.)	stop
S4-1, 4-2	HEADPHONE LEVEL (1/2)	2
S5	POWER (ON ⎓ /OFF ⏦)	OFF ⏦
S6	———	———
S7-1, 7-2	FILTER (ON ⎓ /OFF ⏦)	OFF ⏦
S8-1~8-3	LIMITER (ON ⎓ /OFF ⏦)	OFF ⏦
S9	PAUSE (1) (ON ⎓ /OFF ⏦)	OFF ⏦
S10-1, 10-2	DOLBY NR (ON/OFF)	OFF (OFF button is depressed.)
S11-1~11-4	CAL TONE (ON ⎓ /OFF ⏦)	OFF ⏦
S12	BIAS (LOW/MEDIUM/HIGH)	LOW
S13-1~13-4	EQ (NORMAL/Fe-Cr/CrO2)	NORMAL
S14-1~14-4	FM DOLBY NR (ON ⎓ /OFF ⏦)	OFF (OFF button is depressed.)

4-3. MOUNTING DIAGRAM (1)

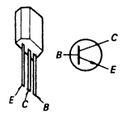
– Conductor Side

Q101 (201): 2SK43

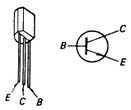


Q102 ~ 104 (202 ~ 204) : 2SC632A
Q108 (208), 302 (402)

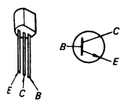
Q105 ~ 107 (205 ~ 207),
Q109 (209), 110 (210), : 2SC633A
Q301 (401), 303 ~ 307
(Q403 ~ 407), 501, 502,
Q504, 505



Q308 (408): 2SC945



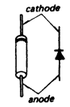
Q503: 2SC1475



IC101 (201), 301 (401)
IC302 (402), 303 (403): TA7122AP
IC304 (404)

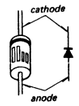
D101 (201), 102 (202),
D105 (205), 303 (403) : 1T22A
D304 (404)

D103 (203), 104 (204),
D302 (402), 305 (405),: 1S1555
D306 (406), 307 (407)

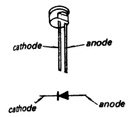


D301 (401): V06C

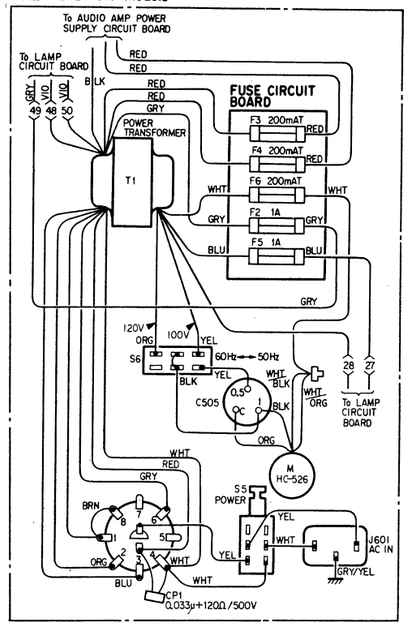
D501, 502: SIB01-02



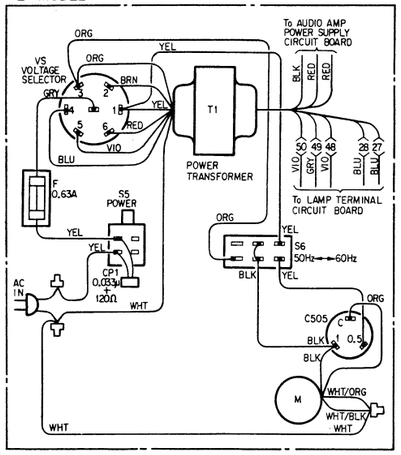
D503: SLP24-B



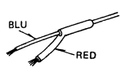
AEP and UK Models

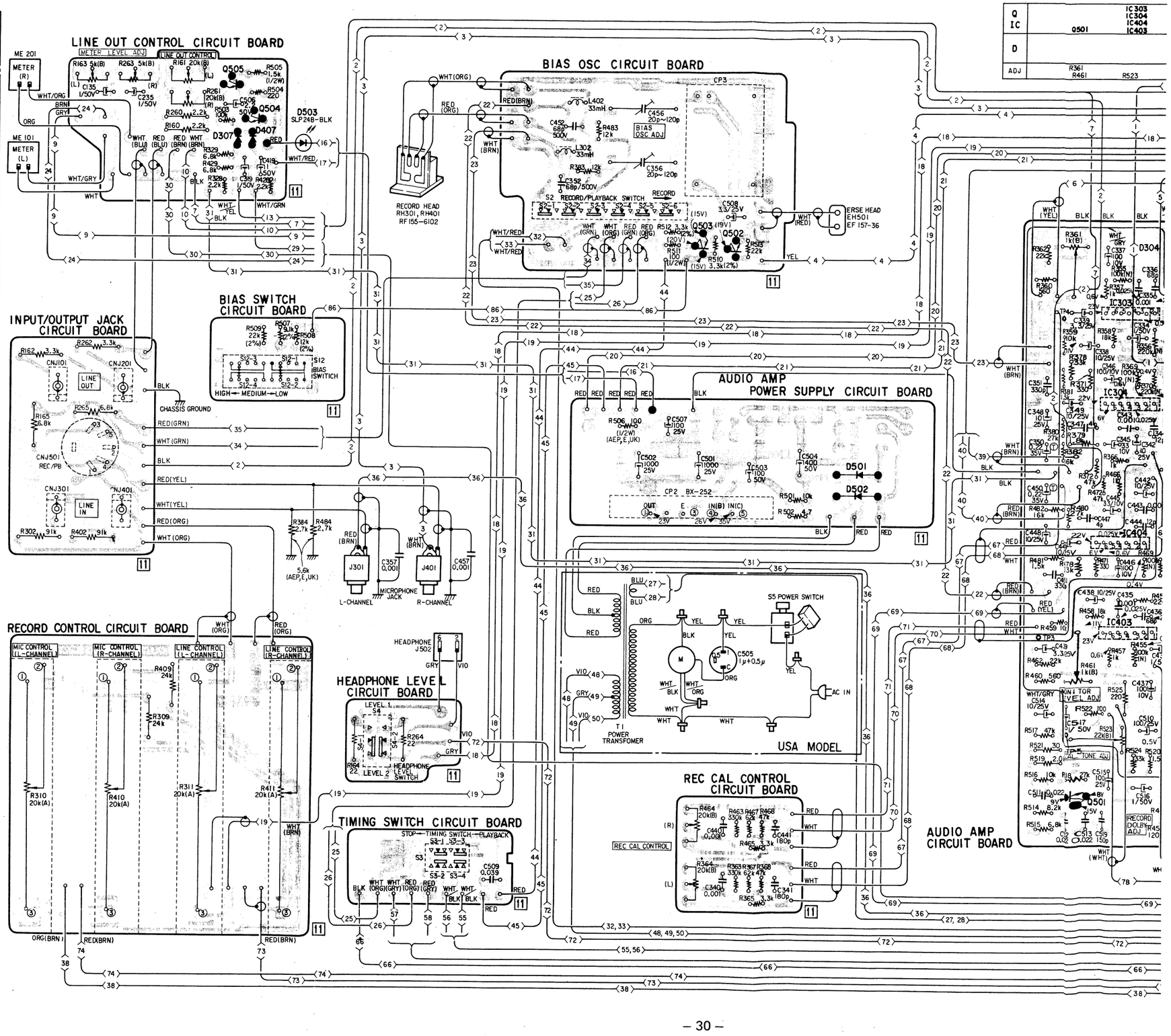


E MODEL

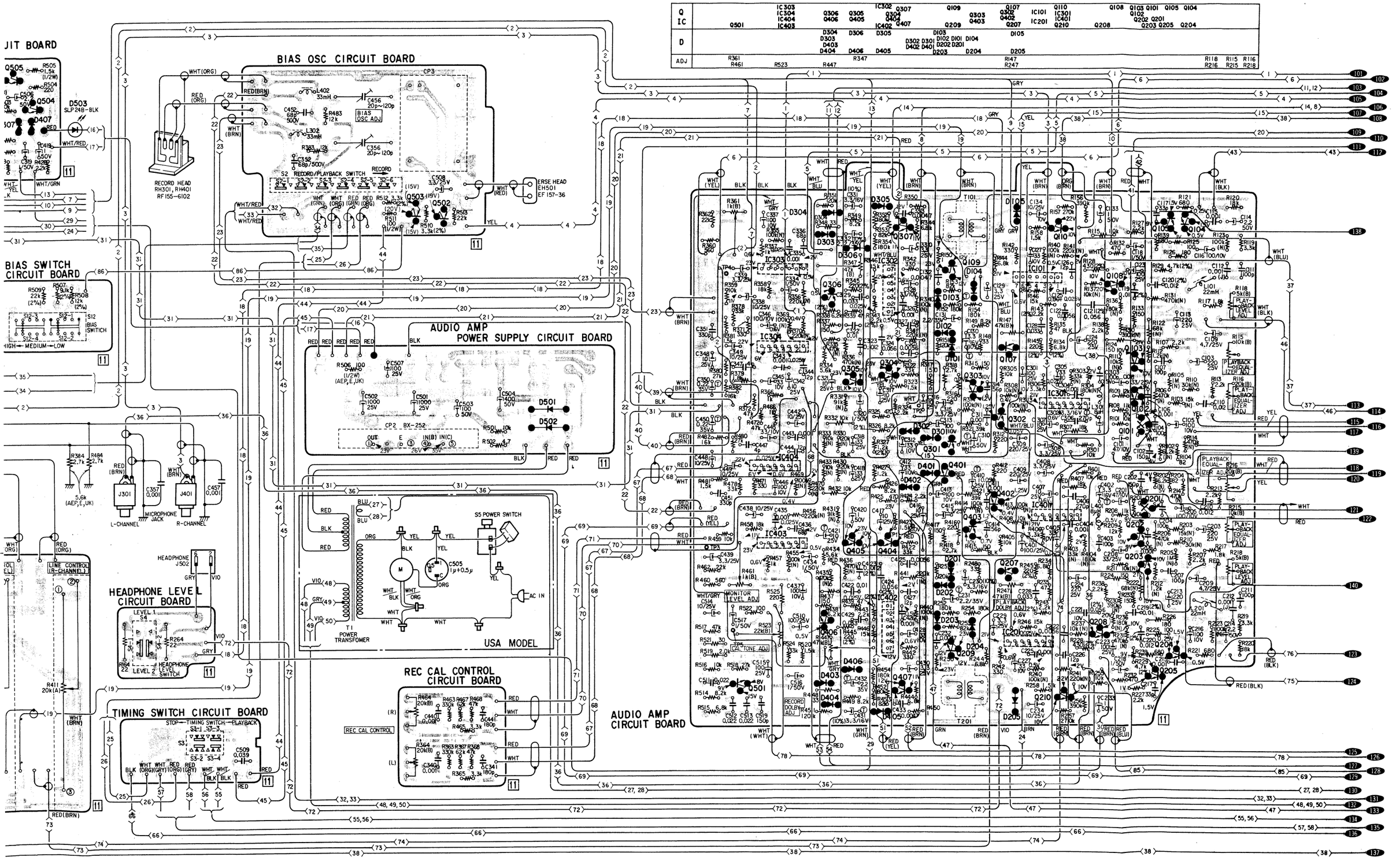


Note: Colour indication for the lead wires.
example: BLU (RED)



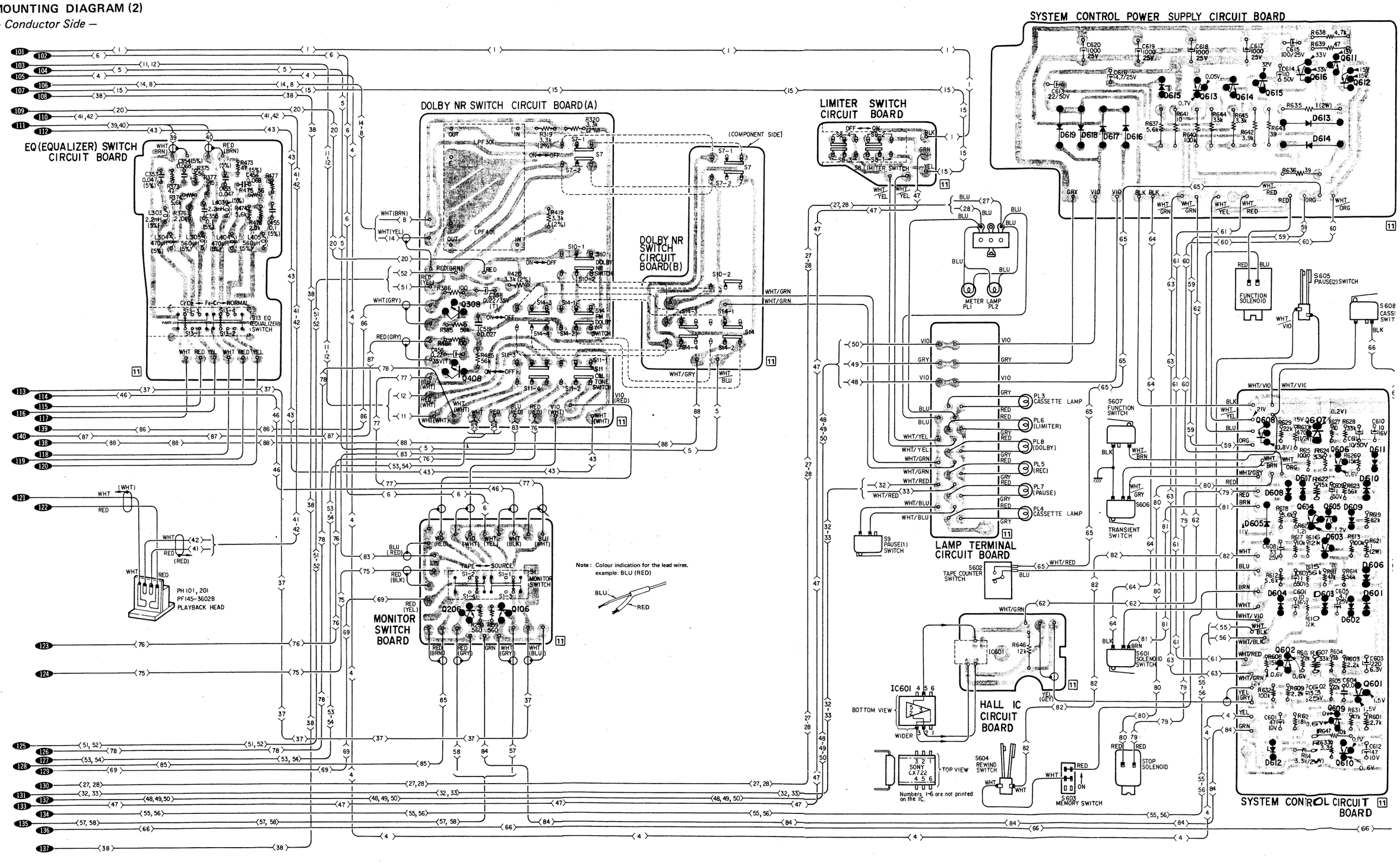


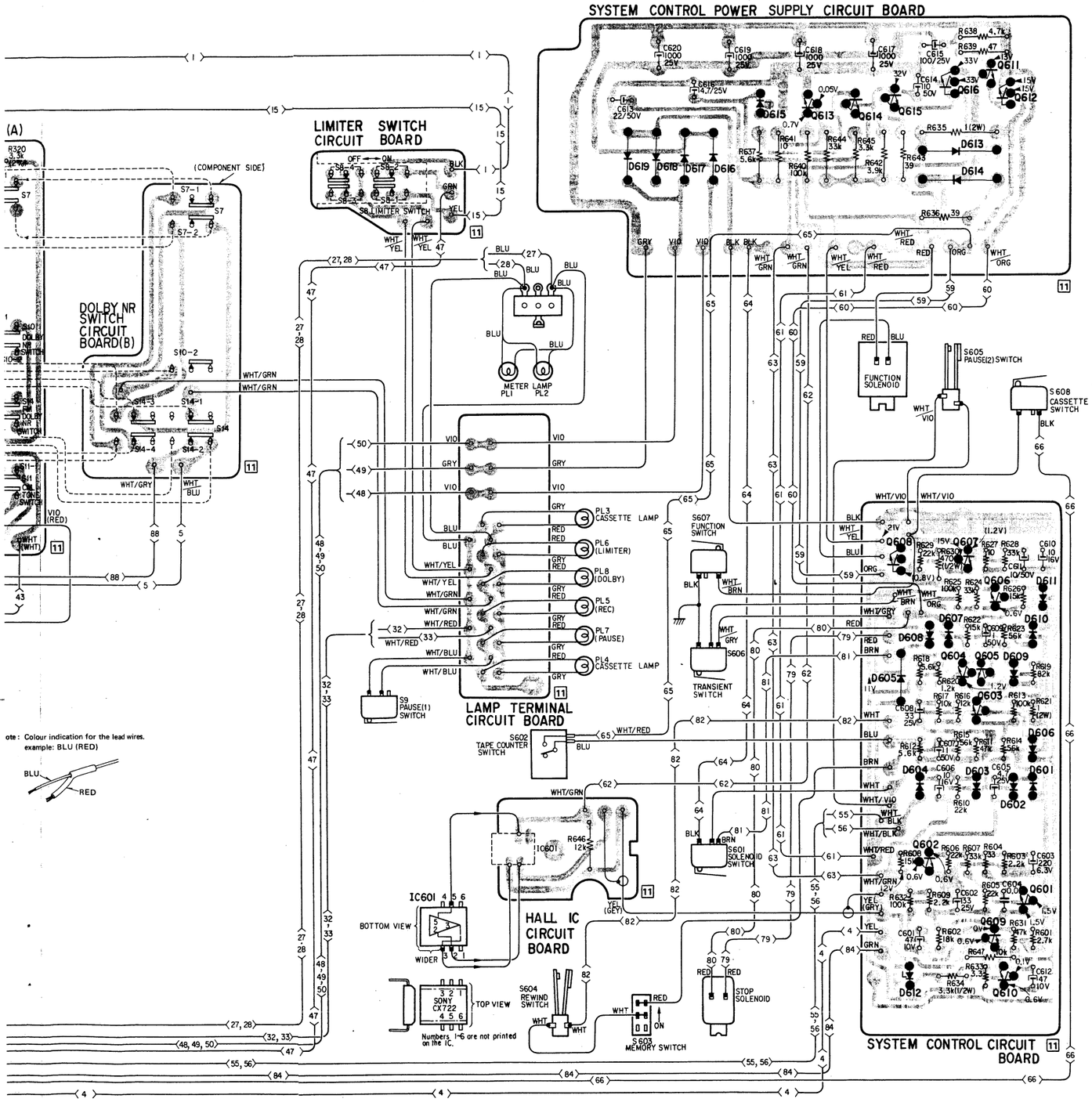
TC-177SD


Q IC D IC ADJ
Q501
IC303 IC304 IC404 IC403
Q306 Q406 Q305 Q405 IC302 Q307 Q304 Q404 IC402 Q407 Q109 Q209 Q303 Q403 Q107 Q207 Q302 Q402 IC101 IC201 Q110 IC301 IC401 Q210 Q108 Q208 Q103 Q101 Q105 Q104 Q102 Q202 Q201 Q203 Q205 Q204
D304 D303 D403 D404 D306 D406 D305 D405 D103 D102 D101 D104 D202 D201 D203 D204 D105 D205
R361 R461 R523 R447 R347 R147 R247 R118 R216 R115 R215 R116 R218
JIT BOARD
BIAS OSC CIRCUIT BOARD
BIAS OSC ADJ
RECORD HEAD RH301, RH401 RF155-6102
S2 RECORD/PLAYBACK SWITCH
ERSE HEAD EH501 EF157-36
BIAS SWITCH CIRCUIT BOARD
AUDIO AMP POWER SUPPLY CIRCUIT BOARD
S5 POWER SWITCH
T1 POWER TRANSFOMER
USA MODEL
HEADPHONE LEVEL CIRCUIT BOARD
REC CAL CONTROL CIRCUIT BOARD
TIMING SWITCH CIRCUIT BOARD
AUDIO AMP CIRCUIT BOARD
MICROPHONE JACK
L-CHANNEL
R-CHANNEL
LINE CONTROL (L-CHANNEL)
HEADPHONE J502
MONITOR LEVEL ADJ
CAL TONE ADJ
RECORD DOLBY NR ADJ
PLAYBACK DOLBY ADJ
PLAYBACK EQUALIZER ADJ
PLAY-BACK LEVEL ADJ
T201

4-4. MOUNTING DIAGRAM (2)

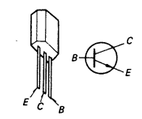
– Conductor Side –


SYSTEM CONTROL POWER SUPPLY CIRCUIT BOARD
DOLBY NR SWITCH CIRCUIT BOARD(A)
DOLBY NR SWITCH CIRCUIT BOARD(B)
LIMITER SWITCH CIRCUIT BOARD
EQ(EQUALIZER) SWITCH CIRCUIT BOARD
MONITOR SWITCH BOARD
LAMP TERMINAL CIRCUIT BOARD
HALL IC CIRCUIT BOARD
SYSTEM CONTROL CIRCUIT BOARD
PH101, 201 PF145-3602B PLAYBACK HEAD
Note : Colour indication for the lead wires. example: BLU (RED)
(COMPONENT SIDE)
BOTTOM VIEW
TOP VIEW
Numbers 1-6 are not printed on the IC.

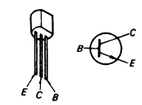


Q106 (206): 2SC633A

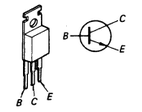
Q601 ~ 604, 606, 607, Q609 ~ 611, 613 ~ 615: 2SC634A



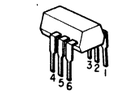
Q605: 2SC1475



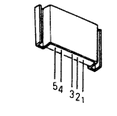
Q608, 612, 616: 2SC1061



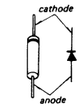
IC601: CX-722



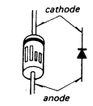
CP2: BX-252



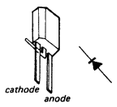
D601 ~ 606, D608 ~ 611: 1T40



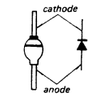
D607, 613, 614: SIB01-02



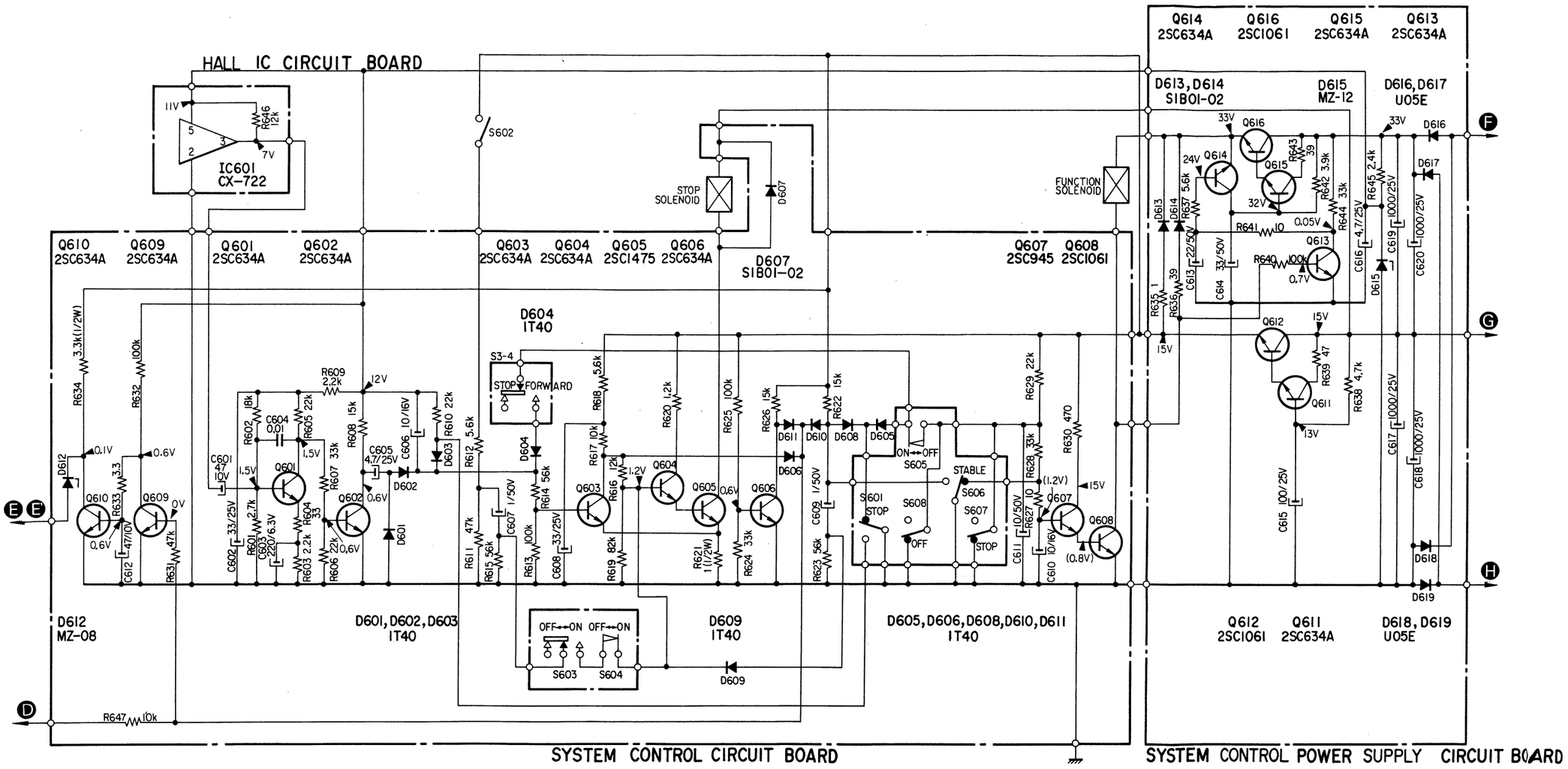
D612: MZ-08
D615: MZ-12



D616 ~ 619: U05E



4-5. SCHEMATIC DIAGRAM (2)



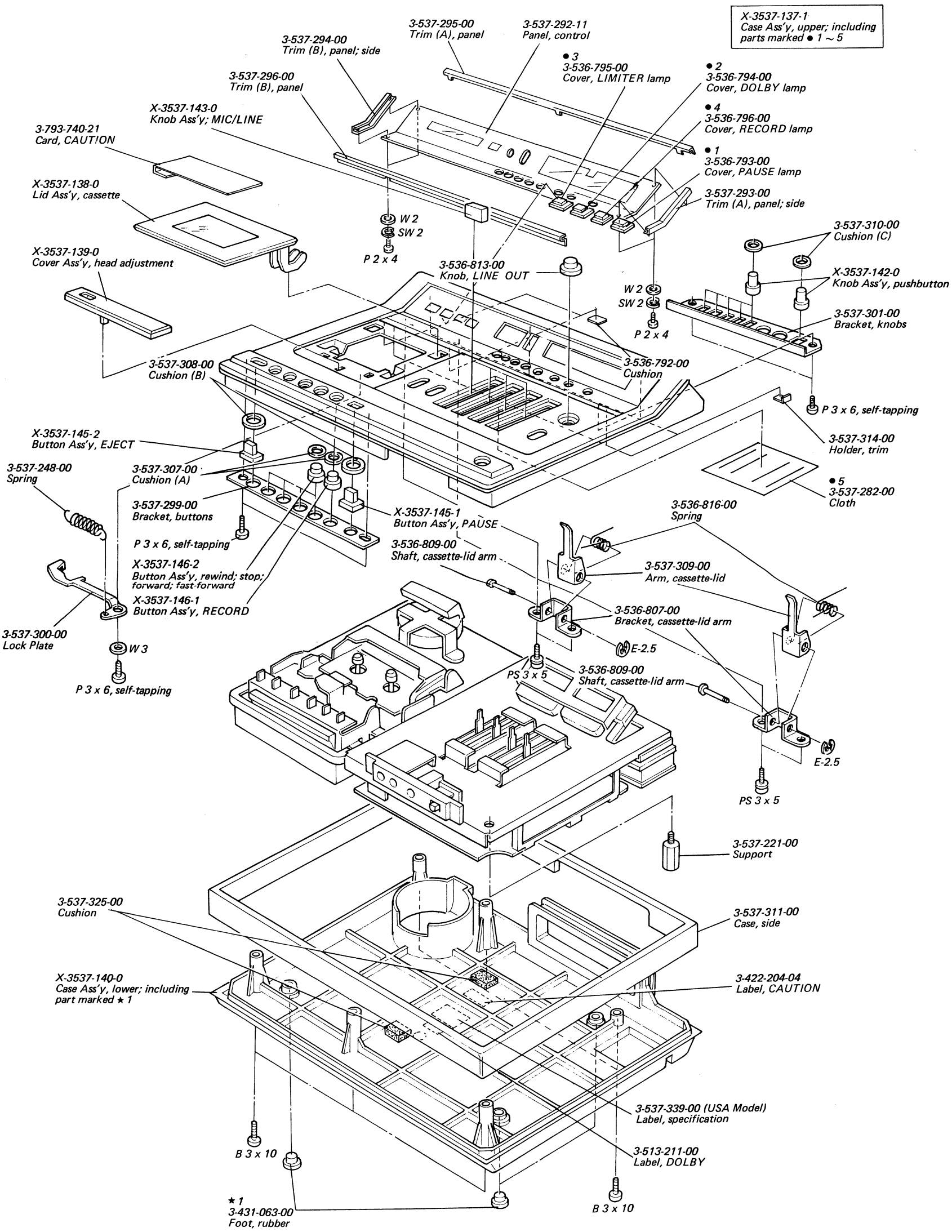
Note:

- All resistors are in Ω, ¼W and carbon type unless otherwise indicated. (k = 1000)
- All capacitors are in μF unless otherwise indicated. (p = μμ)
- Voltage values shown are measured to chassis ground with a voltmeter (20 kΩ/V).

  no mark: stop mode with no signal input
  ( ): record, playback, fast-forward and rewind modes

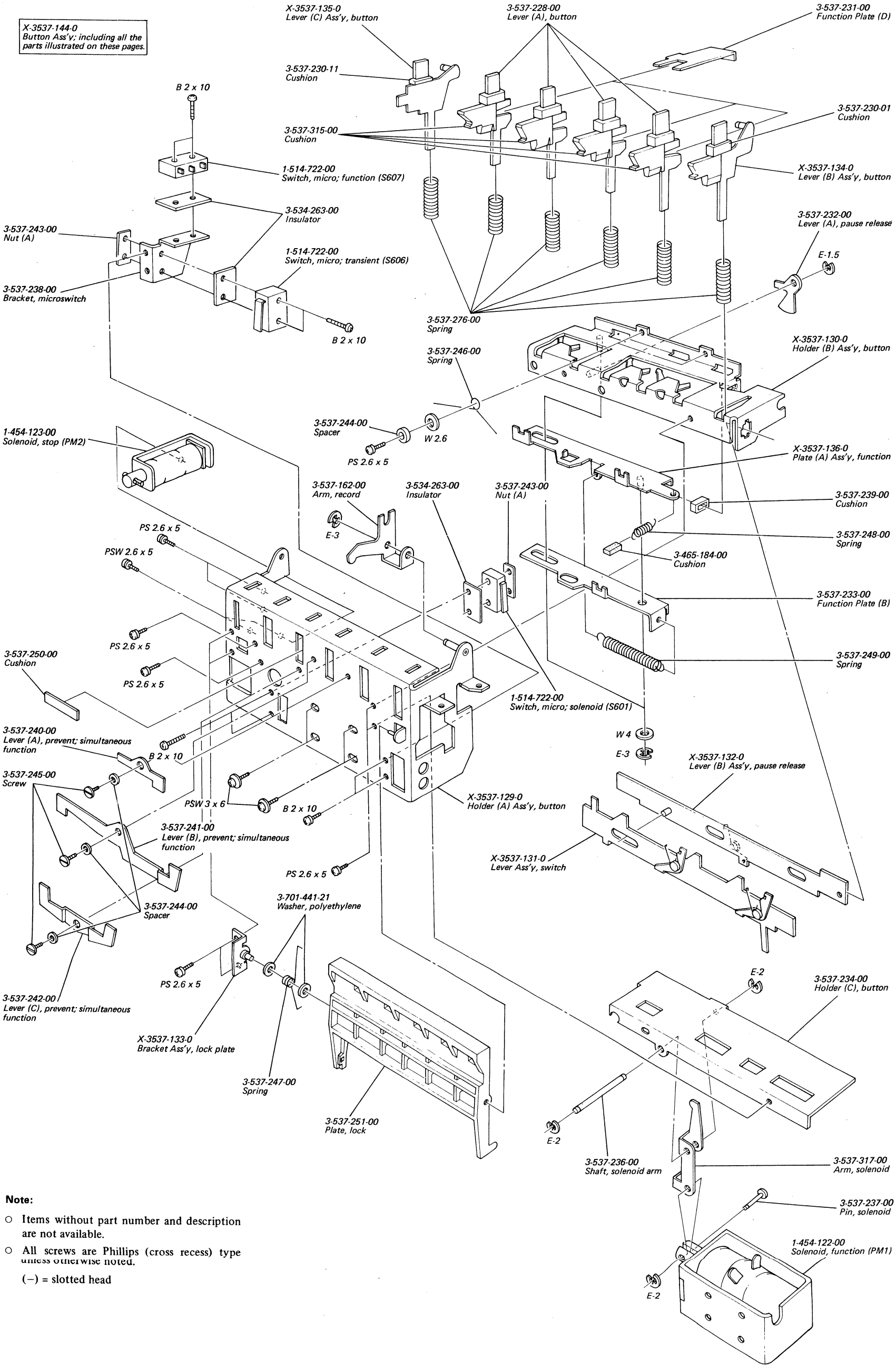
Ref. No.	Switch	Mode
S3-4	timing ("forward" in playback and record modes/"stop" in the other modes.)	stop
S601	solenoid (jointed with the function solenoid. "stop" in stop mode/ON in the other modes.)	stop
S602	counter (ON at "000" indication/OFF at the other indications)	OFF
S603	MEMORY COUNTER (ON/OFF)	OFF
S604	rewind (this switch turns ON only when the rewind button is depressed.)	OFF
S605	PAUSE (2) (this switch turns ON to prevent the stop solenoid operation when the PAUSE button is depressed in playback or record mode.)	OFF
S606	transient ("stable" in stop mode/momentary ON in the other modes.)	stable
S607	function ("stop" in stop mode/ON in the other modes.)	stop
S608	cassette (ON when the tape cassette is inserted.)	OFF

5-1. EXPLODED VIEW (1)



Note:

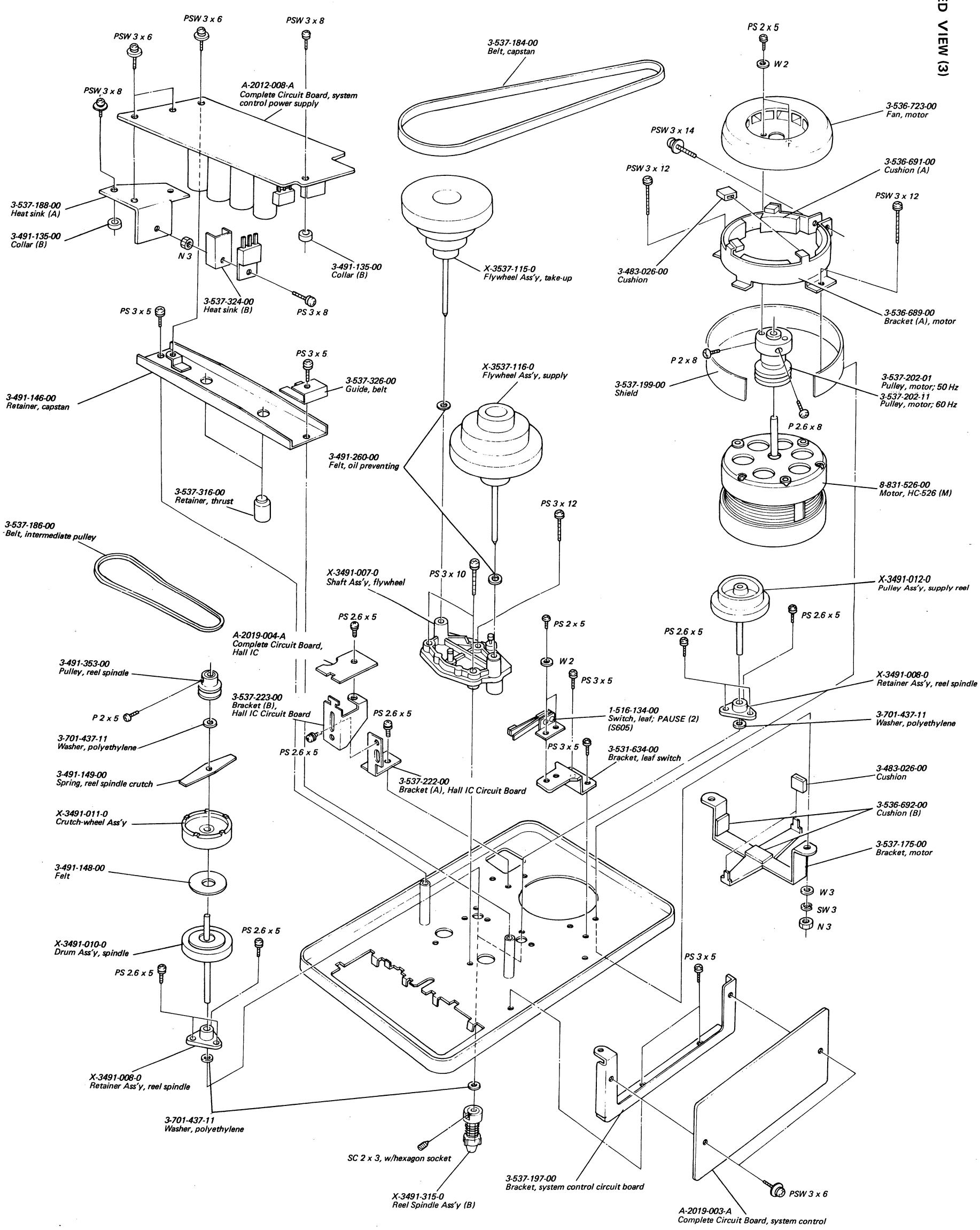
- Items without part number and description are not available.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head



Note:

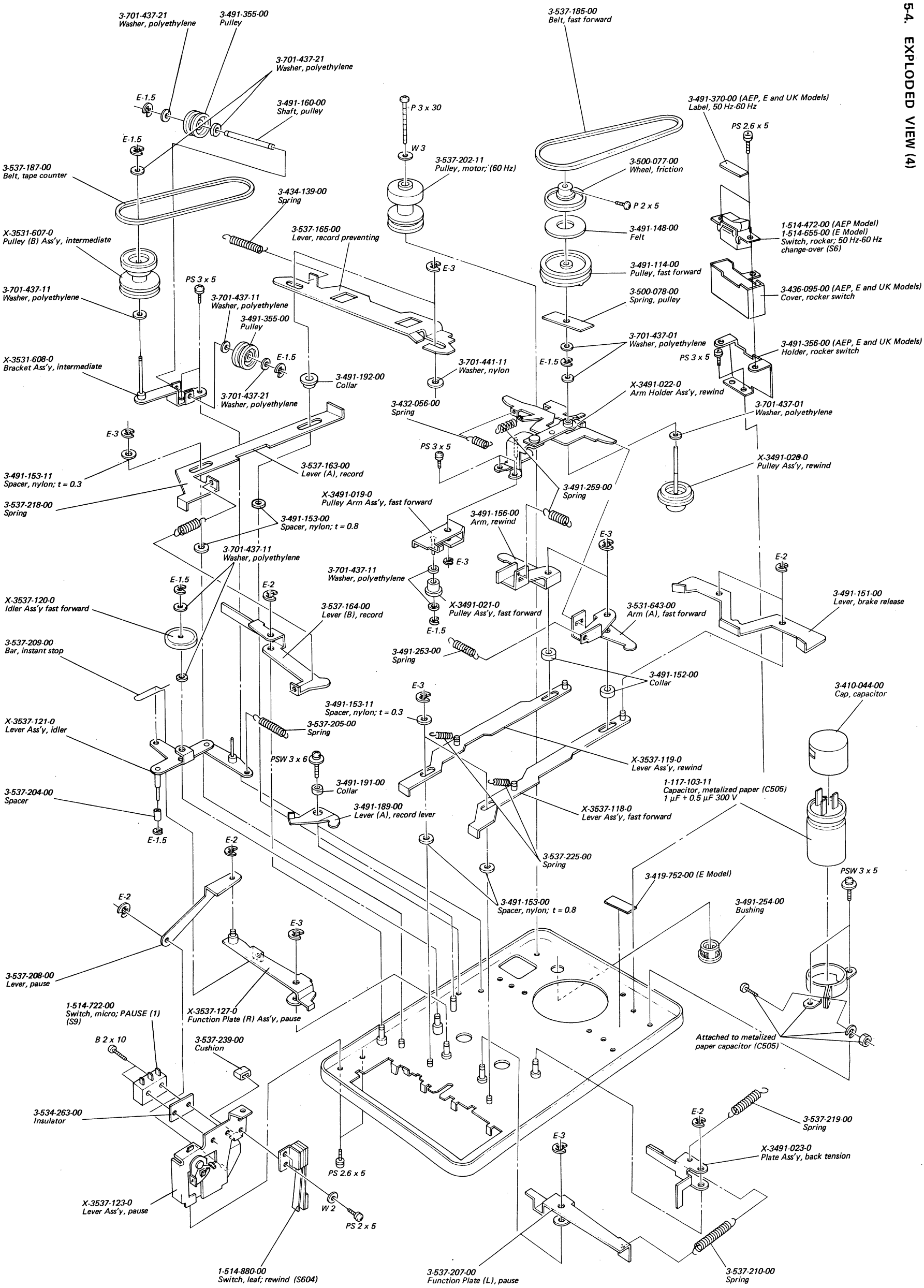
- Items without part number and description are not available.
- All screws are Phillips (cross recess) type unless otherwise noted.

  (−) = slotted head



Note:

- Items without part number and description are not available.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (−) = slotted head



Note:

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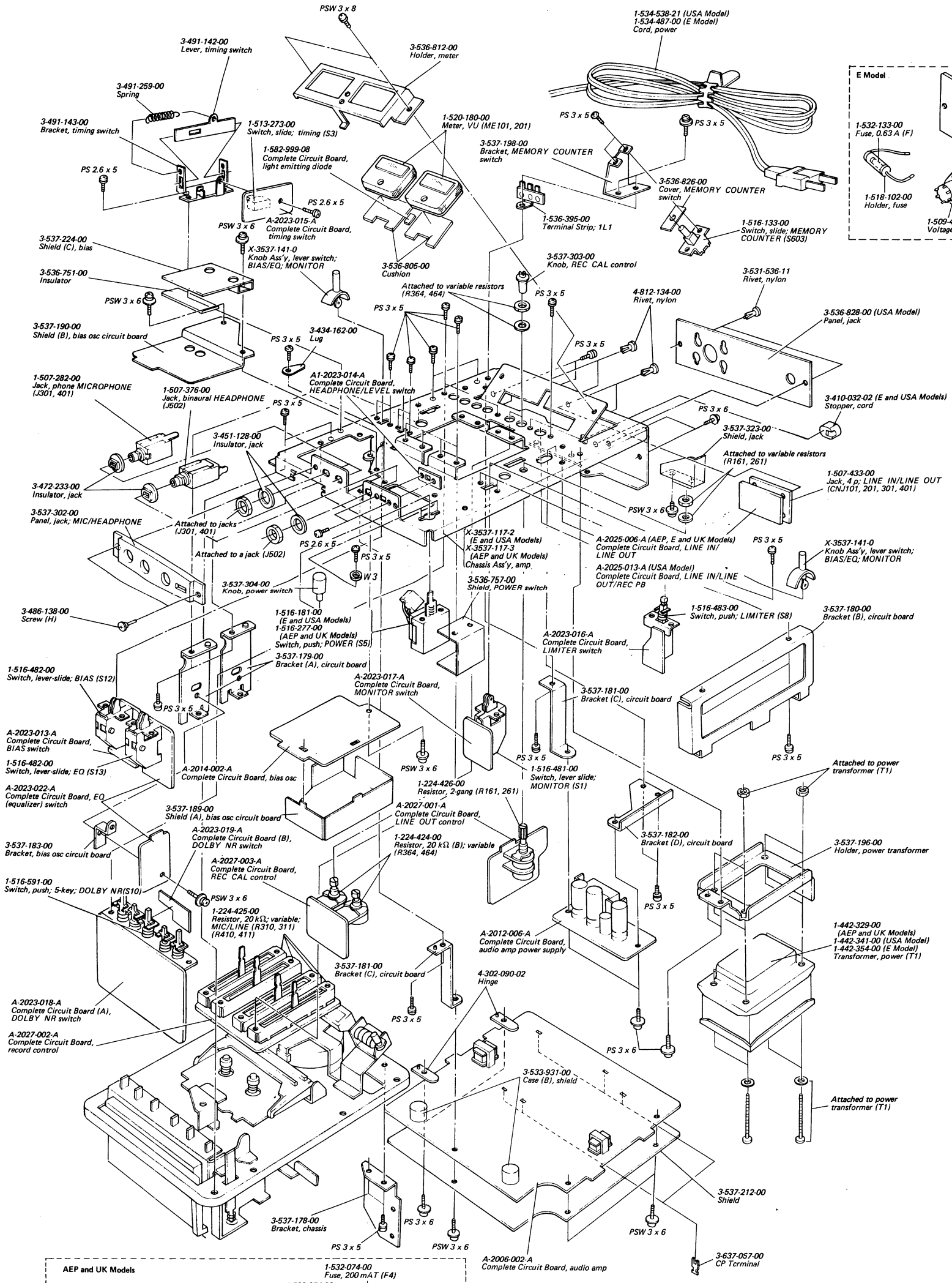
  (–) = slotted head


PSW 3 x 8
3-536-812-00 Holder, meter
3-491-142-00 Lever, timing switch
3-491-259-00 Spring
3-491-143-00 Bracket, timing switch
1-513-273-00 Switch, slide; timing (S3)
1-582-999-08 Complete Circuit Board, light emitting diode
1-520-180-00 Meter, VU (ME101, 201)
PS 2.6 x 5
PS 2.6 x 5
PSW 3 x 6
A-2023-015-A Complete Circuit Board, timing switch
3-537-224-00 Shield (C), bias
X-3537-141-0 Knob Ass'y, lever switch; BIAS/EQ; MONITOR
3-536-805-00 Cushion
3-536-751-00 Insulator
PSW 3 x 6
3-537-190-00 Shield (B), bias osc circuit board
PS 3 x 5
3-434-162-00 Lug
PS 3 x 5
Attached to variable resistors (R364, 464)
PS 3 x 5
PS 3 x 5
1-507-282-00 Jack, phone MICROPHONE (J301, 401)
1-507-376-00 Jack, binaural HEADPHONE (J502)
A1-2023-014-A Complete Circuit Board, HEADPHONE/LEVEL switch
PS 3 x 5
3-451-128-00 Insulator, jack
3-472-233-00 Insulator, jack
3-537-302-00 Panel, jack; MIC/HEADPHONE
Attached to jacks (J301, 401)
Attached to a jack (J502)
PS 2.6 x 5
PS 3 x 5
W 3
3-537-304-00 Knob, power switch
3-486-138-00 Screw (H)
1-516-181-00 (E and USA Models)
1-516-277-00 (AEP and UK Models)
Switch, push; POWER (S5)
3-537-179-00 Bracket (A), circuit board
1-516-482-00 Switch, lever-slide; BIAS (S12)
PS 3 x 5
A-2023-013-A Complete Circuit Board, BIAS switch
1-516-482-00 Switch, lever-slide; EQ (S13)
A-2023-022-A Complete Circuit Board, EQ (equalizer) switch
3-537-189-00 Shield (A), bias osc circuit board
A-2023-019-A Complete Circuit Board (B), DOLBY NR switch
3-537-183-00 Bracket, bias osc circuit board
A-2027-003-A Complete Circuit Board, REC CAL control
1-516-591-00 Switch, push; 5-key; DOLBY NR(S10)
PSW 3 x 6
1-224-425-00 Resistor, 20 kΩ; variable; MIC/LINE (R310, 311) (R410, 411)
A-2023-018-A Complete Circuit Board (A), DOLBY NR switch
A-2027-002-A Complete Circuit Board, record control
1-224-424-00 Resistor, 20 kΩ (B); variable (R364, 464)
A-2027-001-A Complete Circuit Board, LINE OUT control
1-224-426-00 Resistor, 2-gang (R161, 261)
A-2014-002-A Complete Circuit Board, bias osc
A-2023-017-A Complete Circuit Board, MONITOR switch
PSW 3 x 6
3-537-181-00 Bracket (C), circuit board
PS 3 x 5
3-537-303-00 Knob, REC CAL control
PS 3 x 5
1-516-481-00 Switch, lever slide; MONITOR (S1)
3-537-181-00 Bracket (C), circuit board
4-302-090-02 Hinge
PS 3 x 5
A-2012-006-A Complete Circuit Board, audio amp power supply
PS 3 x 5
3-537-182-00 Bracket (D), circuit board
PS 3 x 6
3-533-931-00 Case (B), shield
3-537-178-00 Bracket, chassis
PS 3 x 5
PS 3 x 6
PSW 3 x 6
A-2006-002-A Complete Circuit Board, audio amp
PSW 3 x 6
3-537-212-00 Shield
3-637-057-00 CP Terminal
1-534-538-21 (USA Model)
1-534-487-00 (E Model)
Cord, power
PS 3 x 5
PS 3 x 5
3-537-198-00 Bracket, MEMORY COUNTER switch
3-536-826-00 Cover, MEMORY COUNTER switch
1-536-395-00 Terminal Strip; 1L1
1-516-133-00 Switch, slide; MEMORY COUNTER (S603)
3-531-536-11 Rivet, nylon
4-812-134-00 Rivet, nylon
3-536-828-00 (USA Model) Panel, jack
3-410-032-02 (E and USA Models) Stopper, cord
PS 3 x 6
3-537-323-00 Shield, jack
Attached to variable resistors (R161, 261)
1-507-433-00 Jack, 4 p; LINE IN/LINE OUT (CNJ101, 201, 301, 401)
PSW 3 x 6
X-3537-117-2 (E and USA Models)
X-3537-117-3 (AEP and UK Models)
Chassis Ass'y, amp
A-2025-006-A (AEP, E and UK Models) Complete Circuit Board, LINE IN/LINE OUT
A-2025-013-A (USA Model) Complete Circuit Board, LINE IN/LINE OUT/REC PB
PS 3 x 5
X-3537-141-0 Knob Ass'y, lever switch; BIAS/EQ; MONITOR
3-536-757-00 Shield, POWER switch
1-516-483-00 Switch, push; LIMITER (S8)
3-537-180-00 Bracket (B), circuit board
A-2023-016-A Complete Circuit Board, LIMITER switch
3-537-181-00 Bracket (C), circuit board
PS 3 x 5
Attached to power transformer (T1)
3-537-196-00 Holder, power transformer
3-537-182-00 Bracket (D), circuit board
1-442-329-00 (AEP and UK Models)
1-442-341-00 (USA Model)
1-442-354-00 (E Model)
Transformer, power (T1)
Attached to power transformer (T1)
E Model
3-536-831-00 Panel, jack
1-532-133-00 Fuse, 0.63 A (F)
1-518-102-00 Holder, fuse
PS 3 x 6
1-509-427-00 Voltage Selector (VS)
AEP and UK Models
1-532-074-00 Fuse, 200 mAT (F4)
1-532-074-00 Fuse, 200 mAT (F3)
1-532-205-00 Fuse, 200 mA (F6)
1-509-482-00 Socket, voltage selector (VS)
1-509-546-00 Connector, 3 P; AC IN (J601)
1-533-125-00 Holder, fuse
PS 3 x 6
3-418-709-00 Label, earth
B 3 x 10
B 3 x 10
1-532-063-00 Fuse, 1 A (F5)
1-532-063-00 Fuse, 1 A (F2)
PSW 3 x 6
3-537-334-00 Label, fuse
3-701-394-00 Label, earth
1-442-329-00 Transformer, power (T1)
1-532-235-00 Fuse, 0.315 A (F1)
3-537-336-00 Panel, jack
Part of voltage selector socket

Note:

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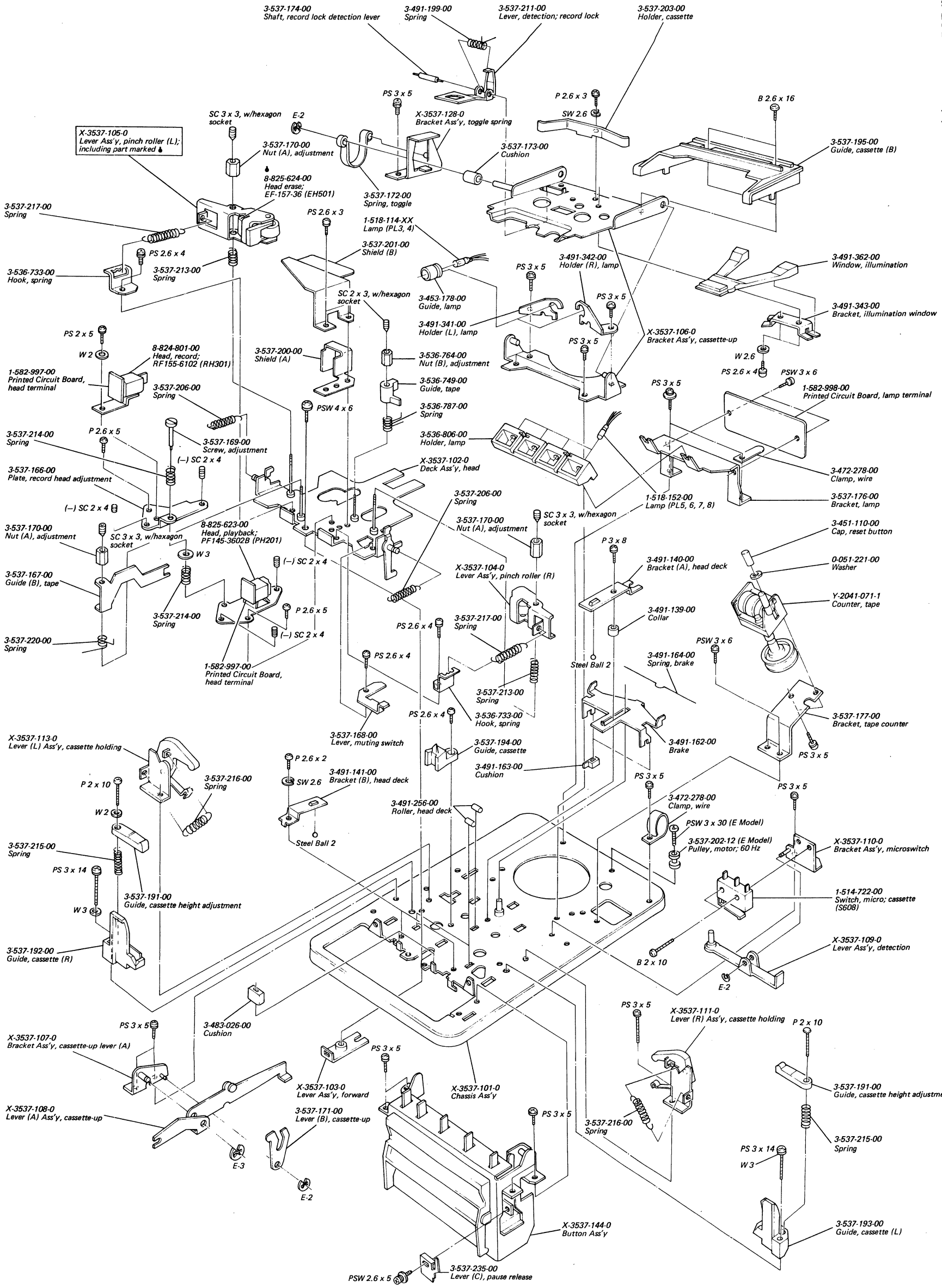

Note:

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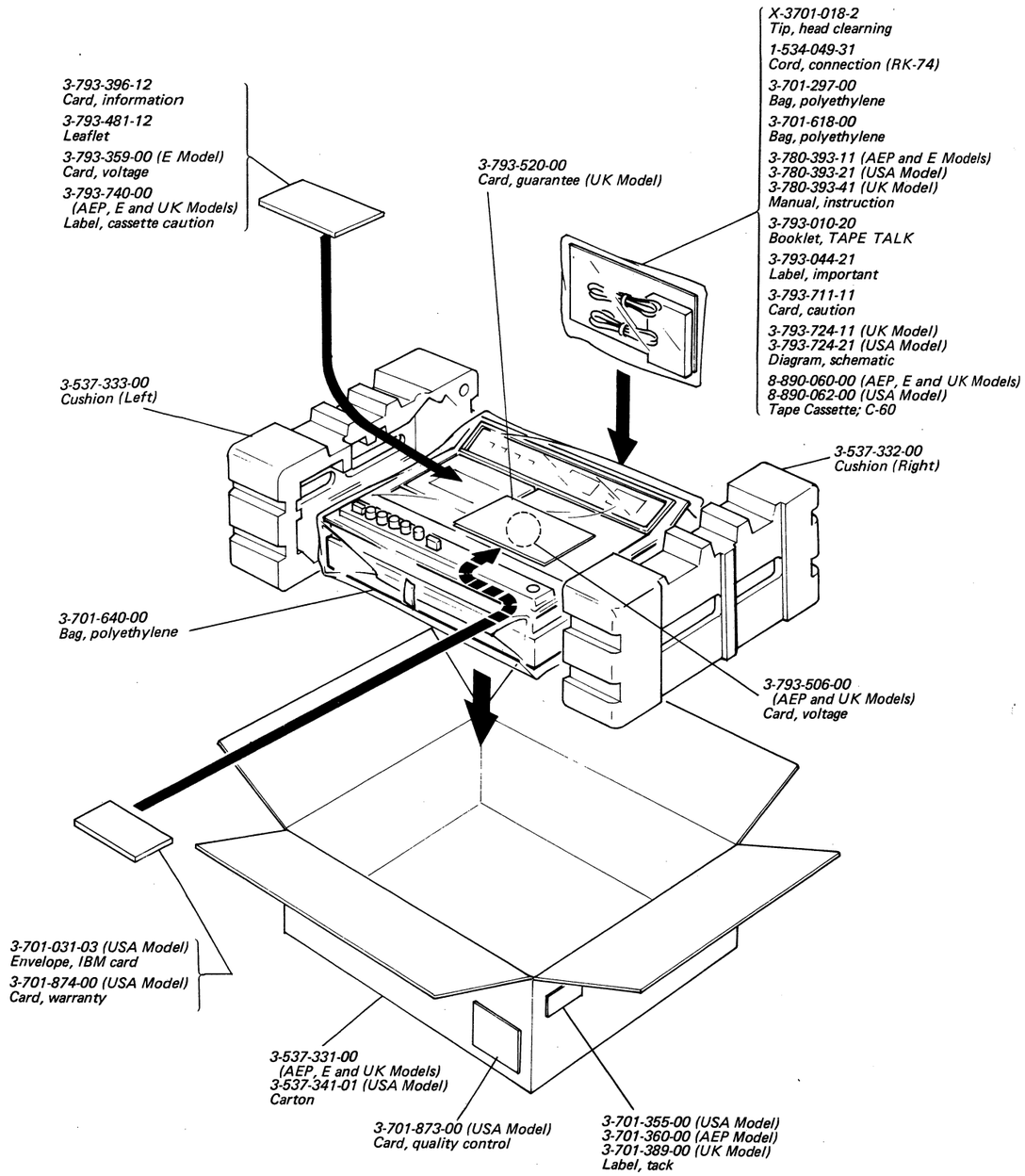
  (–) = slotted head

5-7. PACKING



Note:

○ Items without part number and description are not available.

SECTION 5

ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description
		COMPLETE CIRCUIT BOARDS
	A-2025-006-A	LINE IN/LINE OUT/REC PB Jack (AEP, E and UK Models)
	A-2006-002-A	Audio Amp
	A-2012-006-A	Audio Amp Power Supply
	A-2014-002-A	Bias Osc
	A-2027-001-A	LINE OUT Control
	A-2023-022-A	EQ (EQUALIZER) Switch
	A-2027-002-A	Record Control
	A-2027-003-A	REC CAL Control
	A-2023-013-A	BIAS Switch
	A-2023-014-A	HEADPHONE/LEVEL Switch
	A-2023-015-A	Timing Switch
	A-2023-016-A	LIMITER Switch
	A-2023-017-A	MONITOR Switch
	A-2023-018-A	DOLBY NR Switch (A)
	A-2023-019-A	DOLBY NR Switch (B)
	A-2019-003-A	System Control
	A-2012-008-A	System Control Power Supply
	A-2019-004-A	Hall IC
	A-2025-013-A	LINE IN/LINE OUT Jack (USA Model)
		PRINTED CIRCUIT BOARDS
	1-582-999-00	Light Emitting Diode
	1-582-998-00	Lamp Terminal
	1-582-997-00	Head Terminal
		SEMICONDUCTORS
Q101, 201		Transistor 2SK43
Q102, 202		Transistor 2SC632A
Q103, 203		Transistor 2SC632A
Q104, 204		Transistor 2SC632A
Q105, 205		Transistor 2SC633A
Q106, 206		Transistor 2SC633A
Q107, 207		Transistor 2SC633A
Q108, 208		Transistor 2SC632A
Q109, 209		Transistor 2SC633A
Q110, 210		Transistor 2SC633A
Q301, 401		Transistor 2SC633A
Q302, 402		Transistor 2SC632A
Q303, 403		Transistor 2SC633A
Q304, 404		Transistor 2SC633A
Q305, 405		Transistor 2SC633A
Q306, 406		Transistor 2SC633A

Ref. No.	Part No.	Description
Q307, 407		Transistor 2SC633A
Q308, 408		Transistor 2SC945
Q501		Transistor 2SC633A
Q502		Transistor 2SC633A
Q503		Transistor 2SC1475
Q504		Transistor 2SC633A
Q505		Transistor 2SC633A
Q601		Transistor 2SC634A
Q602		Transistor 2SC634A
Q603		Transistor 2SC634A
Q604		Transistor 2SC634A
Q605		Transistor 2SC1475
Q606		Transistor 2SC634A
Q607		Transistor 2SC634A
Q608		Transistor 2SC1061
Q609		Transistor 2SC634A
Q610		Transistor 2SC634A
Q611		Transistor 2SC634A
Q612		Transistor 2SC1061
Q613		Transistor 2SC634A
Q614		Transistor 2SC634A
Q615		Transistor 2SC634A
Q616		Transistor 2SC1061
D101, 201		Diode 1T22A
D102, 202		Diode 1T22A
D103, 203		Diode 1S1555
D104, 204		Diode 1S1555
D105, 205		Diode 1T22A
D301, 401		Diode VO-6C
D302, 402		Diode 1S1555
D303, 403		Diode 1T22A
D304, 404		Diode 1T22A
D305, 405		Diode 1S1555
D306, 406		Diode 1S1555
D307, 407		Diode 1S1555
D501		Diode SIB01-02
D502		Diode SIB01-02
D503		Diode SLP24B
D601		Diode 1T40
D602		Diode 1T40
D603		Didde 1T40
D604		Diode 1T40

Ref. No.	Part No.	Description
D605		Diode 1T40
D606		Diode 1T40
D607		Diode SIB01-02
D608		Diode 1T40
D609		Diode 1T40
D610		Diode 1T40
D611		Diode 1T40
D612		Diode MZ-08
D613		Diode SIB01-02
D614		Diode SIB01-02
D615		Diode MZ-12
D616		Diode U05E
D617		Diode U05E
D618		Diode U05E
D619		Diode U05E
IC101, 201		Integrated Circuit, TA7122AP
IC301, 401		Integrated Circuit, TA7122AP
IC302, 402		Integrated Circuit, TA7122AP
IC303, 403		Integrated Circuit, TA7122AP
IC304, 404		Integrated Circuit, TA7122AP
IC601		Hall IC, CX-722

COILS

L101, 201	1-407-240-00	22 mH, variable inductor
L301, 401	1-407-519-00	8μH, inductor
L302, 402	1-407-510-00	33 mH, micro inductor
L303, 403	1-407-496-00	2.2 mH, micro inductor
L304, 404	1-407-488-00	0.47 mH, micro inductor
L305, 405	1-407-489-00	0.56 mH, micro inductor

TRANSFORMERS

T1	1-442-329-00	Power (AEP and UK Models)
	1-442-341-00	Power (USA Model)
	1-442-354-00	Power (E Model)
T101, 201	1-427-270-00	Headphone

CAPACITORS

All capacitors are in μF, unless otherwise indicated. (p = μμ, elect = electrolytic)

C101, 201	1-121-352-11	47	10V	elect
C102, 202	1-107-089-11	150p	50V	silvered mica
C103, 203	1-121-422-11	220	25V	elect
C104, 204	1-107-085-11	100p	50V	silvered mica
C105, 205	1-121-414-11	100	10V	elect
C106, 206	1-105-821-12	0.001	50V	mylar
C107, 207	1-107-085-11	100p	50V	silvered mica
C108, 208	1-121-404-11	33	25V	elect
C109, 209	1-121-392-11	3.3	25V	elect
C110, 210	1-105-674-12	0.012	50V	mylar
C111, 211	1-107-085-11	100p	50V	silvered mica
C112, 212	1-105-501-12	0.001	50V	mylar
C113, 213	1-121-422-11	220	25V	elect
C114, 214	1-121-450-11	2.2	50V	elect
C115, 215	1-105-821-12	0.001	50V	mylar
C116, 216	1-121-414-11	100p	10V	elect
C117, 217	1-107-073-11	33p	50V	silvered mica
C118, 218	1-121-391-11	1	50V	elect
C119, 219	1-129-701-21	0.01	100V	polypropylene
C120, 220	1-129-896-21	0.012	100V	polypropylene
C121, 221	1-129-899-11	0.056	100V	polypropylene
C122, 222	1-105-510-12	0.0056	50V	mylar
C123, 223	1-121-416-11	100	25V	elect
C124, 224	1-121-422-11	220	25V	elect
C125, 225	1-105-821-12	0.001	50V	mylar
C126, 226	1-107-063-11	12p	50V	silvered mica
C127, 227	1-121-402-11	33	10V	elect
C128, 228	1-105-529-12	0.033	50V	mylar
C129, 229	1-121-392-11	3.3	25V	elect
C130, 230	1-131-197-21	3.3	16V	tantalum
C131, 231	1-121-391-11	1	50V	elect
C132, 232	1-121-669-11	0.0047	50V	elect
C133, 233	1-121-391-11	1	50V	elect
C134, 234	1-121-398-11	10	25V	elect
C135, 235	1-121-391-11	1	50V	elect
C301, 401	1-121-416-11	100	25V	elect
C302, 402	1-131-197-11	3.3	16V	tantalum
C303, 403	1-107-085-11	100p	50V	silvered mica
C304, 404	1-105-821-12	0.001	50V	mylar
C305, 405	1-121-402-11	33	10V	elect
C306, 406	1-107-095-11	270p	10V	silvered mica
C307, 407	1-121-398-11	10	25V	elect
C308, 408	1-121-392-11	3.3	25V	elect
C309, 409	1-121-422-11	220	25V	elect
C310, 410	1-131-236-11	1	25V	tantalum
C311, 411	1-105-821-12	0.001	50V	mylar
C312, 412	1-121-402-11	33	10V	elect
C313, 413	1-121-414-11	100	10V	elect
C314, 414	1-107-079-11	56p	10V	silvered mica
C315, 415	1-121-392-11	3.3	25V	elect
C316, 416 C317, 417	1-121-398-11	10	25V	elect
C318, 418	1-121-404-11	33	25V	elect
C319, 419 C320, 420	1-121-391-11	1	50V	elect

Ref. No.	Part No.			Description	
C321, 421	1-131-238-11	10	50V	tantalum	
C322, 422	1-129-701-21	0.01	100V	polypropylene	
C323, 423	1-129-896-21	0.012	100V	polypropylene	
C324, 424	1-129-899-11	0.056	100V	polypropylene	
C325, 425	1-105-821-12	0.056	50V	mylar	
C326, 426	1-105-821-12	0.001	50V	mylar	
C327, 427	1-107-063-11	12p	50V	silvered mica	
C328, 428	1-121-402-11	33	10V	elect	
C329, 429	1-105-519-11	0.033	50V	mylar	
C330, 430	1-121-392-11	3.3	25V	silvered mica	
C331, 431	1-131-197-21	3.3	16V	tantalum	
C332, 432	1-121-391-11	1	50V	elect	
C333, 433	1-105-669-12	0.0047	50V	mylar	
C334, 434	1-121-391-11	1	50V	elect	
C335, 435	1-105-821-12	0.001	50V	mylar	
C336, 436	1-107-081-11	68p	50V	silvered mica	
C337, 437	1-121-414-11	100	10V	elect	
C338, 438	1-121-398-11	10	25V	elect	
C339, 439	1-121-392-11	3.3	25V	elect	
C340, 440	1-105-661-12	0.001	50V	mylar	
C341, 441	1-107-091-11	180p	50V	silvered mica	
C342, 442	1-121-398-11	10	25V	elect	
C343, 443	1-107-063-11	12p	50V	silvered mica	
C344, 444	1-107-063-11	12p	50V	silvered mica	
C345, 445	1-121-402-11	33	10V	elect	
C346, 446	1-121-414-11	10	10V	elect	
C347, 447	1-107-101-11	4p	50V	silvered mica	
C348, 448 C349, 449	1-121-398-11	10	25V	elect	
C350, 450	1-131-211-21	0.2	35V	tantalum	
C351, 451	1-107-097-11	330p	35V	silvered mica	
C352, 452	1-107-036-11	68p	500V	silvered mica	
C353, 453	1-105-521-12	0.047	50V	mylar	5%
C354, 454	1-105-523-12	0.068	50V	mylar	5%
C355, 455	1-105-525-12	0.1	50V	mylar	5%
C356, 456	1-141-034-00	20 ~ 120p		trimmer	
C357, 457	1-105-821-12	0.001	50V	mylar	
C358, 458	1-131-211-11	0.22	35V	tantalum	
C501, 502	1-121-657-11	1000	25V	elect	
C503	1-121-417-11	100	50V	elect	
C504	1-121-810-11	470	50V	elect	
C505	1-117-103-11	1 + 0.5	300V	metalized paper	
C506	1-121-450-11	2.2	50V	elect	
C507	1-121-416-11	100	25V	elect	
C508	1-121-398-11	10	25V	elect	

Ref. No.	Part No.			Description	
C509	1-105-680-12	0.039	50V	mylar	
C510	1-121-416-11	100	25V	elect	
C511 ~ 513	1-105-517-12	0.022	50V	mylar	5%
C514	1-121-398-11	10	25V	elect	
C515	1-121-416-11	100	25V	elect	
C516, 517	1-121-391-11	1	50V	elect	
C519	1-105-678-12	0.027	50V	mylar	
		(AEP, E and UK Models)			
C601	1-121-352-11	47	10V	elect	
C602	1-121-404-11	33	25V	elect	
C603	1-121-419-11	220	6.3V	elect	
C604	1-105-673-12	0.01	50V	mylar	
C605	1-121-395-11	4.7	25V	elect	
C606	1-131-232-11	4.7	16V	tantalum	
C607	1-121-391-11	1	50V	elect	
C608	1-121-404-11	33	25V	elect	
C609	1-121-391-11	1	50V	elect	
C610	1-131-199-11	10	16V	tantalum	
C611	1-121-396-11	4.7	50V	elect	
C612	1-121-395-11	47	25V	elect	
C613	1-121-152-11	22	25V	elect	
C614	1-121-405-11	33	50V	elect	
C615	1-121-416-11	100	25V	elect	
C616	1-121-395-11	4.7	25V	elect	
C617 ~ 620	1-121-657-11	1000	25V	elect	

RESISTORS

All resistors are in Ω, ¼W and carbon type unless otherwise indicated. (k = 1,000, M = 1,000 k)

R101, 201	1-242-697-11	10 k
R102, 202	1-242-692-09	6.2 k, low noise
R103, 203	1-242-701-09	15 k, low noise
R104, 204	1-242-647-11	82
R105, 205	1-242-745-09	1 M, low noise
R106, 206	1-242-737-09	470 k, low noise
R107, 207	1-242-681-11	2.2 k
R108, 208	1-242-698-11	11 k
R109, 209	1-242-699-11	12 k
R110, 210	1-242-708-09	30 k, low noise
R111, 211	1-242-697-09	10 k, low noise
R112, 212	1-242-675-09	1.2 k, low noise
R113, 213	1-242-681-11	2.2 k
R114, 214	1-242-737-09	470, low noise
R115, 215	1-221-630-00	20 k, adjustable

Ref. No.	Part No.	Description	
R116, 216	1-221-383-00	10 k, adjustable	
R117, 217	1-242-679-11	1.8 k	
R118, 218	1-221-311-00	5 k, adjustable	
R119, 219	1-242-685-11	3.3 k	
R120, 220	1-242-703-11	18 k	
R121, 221	1-242-669-11	680	
R122, 222	1-242-717-09	68 k, low noise	
R123, 223	1-242-721-09	100 k, low noise	
R124, 224	1-242-653-11	150	
R125, 225	1-242-649-11	100	
R126, 226	1-242-655-11	180	
R127, 227	1-242-681-11	2.2 k	
R128, 228	1-210-873-11	430	2%
R129, 229	1-210-876-11	4.7 k	2%
R130, 230	1-242-735-09	390 k, low noise	
R131, 231	1-242-737-09	470 k, low noise	
R132, 232	1-242-665-11	470	
R133, 233	1-242-653-11	150	
R134, 234	1-242-863-11	6.8 k	
R135, 235	1-242-641-11	47	
R136, 236	1-242-727-09	180 k, low noise	
R137, 237	1-242-697-09	10 k, low noise	
R138, 238	1-242-681-11	2.2 k	
R139, 239	1-242-669-11	680	
R140, 240	1-242-721-09	100 k, low noise	
R141, 241	1-242-729-09	220 k, low noise	
R142, 242	1-242-661-11	330	
R143, 243	1-210-862-11	2.2 k	
R144, 244	1-242-693-11	6.8 k	
R145, 245	1-210-861-11	220	
R146, 246	1-242-705-11	22 k	
R147, 247	1-222-775-00	22 k, adjustable	
R148, 248	1-242-637-11	33	
R149, 249	1-242-695-11	8.2 k	
R150, 250	1-242-601-11	1	
R151, 251	1-242-723-11	120 k	
R152, 252	1-242-727-11	180	
R153, 253	1-242-719-11	82 k	
R154, 254	1-242-727-11	180 k	
R155, 255	1-242-697-11	10 k	
R156, 256	1-242-735-11	390 k	
R157, 257	1-242-731-11	270 k	
R158, 258	1-242-677-11	1.5 k	
R159, 259	1-242-667-11	560	
R160, 260	1-244-681-11	2.2 k	

Ref. No.	Part No.	Description	
R161, 261	1-224-426-00	20 k (A), variable; 2-gang; VOL	
R162, 262	1-244-685-11	3.3 k	
R163, 263	1-221-311-00	5 k, adjustable	
R164, 264	1-244-629-11	15	
R165, 265	1-244-693-11	6.8 k (AEP, E and UK Models)	
R301, 401	1-242-697-11	10 k	
R302, 402	1-244-720-11	91 k	
R303, 403	1-242-709-09	33 k, low noise	
R304, 404	1-242-727-09	180 k, low noise	
R305, 405	1-242-697-11	10 k	
R306, 406	1-242-685-11	3.3 k	
R307, 407	1-242-703-11	18 k	
R308, 408	1-242-697-09	10 k, low noise	
R309, 409	1-244-706-11	24 k	
R310, 410	1-224-425-00	20 k (A), variable; MIC VOL (L), (R)	
R311, 411	1-224-425-00	20 k (A), variable; LINE VOL (L), (R)	
R312, 412	1-242-657-11	220	
R313, 413	1-242-721-09	100 k, low noise	
R314, 414	1-242-721-09	100 k, low noise	
R315, 415	1-242-653-11	150	
R316, 416	1-242-567-11	220	
R317, 417	1-242-653-11	150	
R318, 418	1-242-683-11	2.7 k	
R319, 419 R320, 420	1-210-875-11	3.3 k	2%
R321, 421	1-210-711-11	39 k	
R322, 422	1-210-709-11	33 k	
R323, 423	1-210-677-11	1.5 k	
R324, 424	1-210-681-11	2.2 k	
R325, 425	1-210-665-11	470	
R326, 426	1-210-877-11	8.2 k	2%
R327, 427	1-210-874-11	1.2 k	2%
R328, 428	1-242-681-11	2.2 k	
R329, 429	1-242-693-11	6.8 k	
R330, 430	1-242-723-09	120 k, low noise	
R331, 431	1-242-720-09	91 k, low noise	
R332, 432	1-242-697-11	10 k	
R333, 433	1-242-697-09	10 k, low noise	
R334, 434	1-242-691-11	5.6 k	
R335, 435 R336, 436	1-242-737-09	470 k, low noise	
R337, 437	1-242-653-11	150	
R338, 438	1-210-853-11	6.2 k	
R339, 439	1-242-641-11	47	
R340, 440	1-242-721-09	100 k, low noise	
R341, 441	1-242-729-09	220 k, low noise	

Ref. No.	Part No.	Description
R342, 442	1-242-661-11	330
R343, 443	1-210-862-11	2.2 k
R344, 444	1-242-693-11	6.8 k
R345, 445	1-210-861-11	220
R346, 446	1-242-707-11	27 k
R347, 447	1-222-775-00	22 k, adjustable
R348, 448	1-242-637-11	33
R349, 449	1-242-695-11	8.2 k
R350, 450	1-242-601-11	1
R351, 451	1-242-723-11	120 k
R352, 452	1-242-727-11	180 k
R353, 453	1-242-719-11	82 k
R354, 454	1-242-727-11	180 k
R355, 455	1-242-721-09	100 k, low noise
R356, 456	1-242-729-09	220 k, low noise
R357, 457	1-242-673-11	1 k
R358, 458	1-242-703-11	18 k
R359, 459	1-242-697-11	10 k
R360, 460	1-242-667-11	560
R361, 461	1-222-771-00	1 k, adjustable
R362, 462	1-242-705-11	22 k
R363, 463	1-242-733-11	330 k
R364, 464	1-224-424-00	20 k (B), variable; REC CAL VOL (L), (R)
R365, 465	1-242-685-11	3.3 k
R366, 466	1-242-673-11	1 k
R367, 467	1-242-716-11	62 k
R368, 468	1-242-713-11	47 k
R369, 469	1-242-721-09	100 k, low noise
R370, 470	1-242-729-09	220 k, low noise
R371, 471	1-242-661-11	330
R372, 472	1-242-713-11	47 k
R373, 473	1-242-641-11	47
R374, 474	1-242-691-11	5.6 k
R375, 475	1-242-643-11	56
R376, 476	1-242-680-11	2 k
R377, 477	1-242-629-11	15 k
R378, 478	1-242-709-11	33 k
R379, 479	1-242-679-11	1.8 k
R380, 480	1-242-707-11	27 k
R381, 481	1-242-677-11	1.5 k
R382, 482	1-242-702-11	16 k
R383, 483	1-242-699-11	12 k
R384, 484	1-244-683-11	2.7 k (USA Model)
	1-244-691-11	5.6 k (AEP, E and UK Models)
R385, 485	1-242-715-11	56 k
R386, 486	1-242-649-11	100
R501	1-242-697-11	10 k

Ref. No.	Part No.	Description
R502	1-242-617-11	4.7
R503	1-242-721-11	100 k
R504	1-242-657-11	220
R505	1-244-877-11	1.5 k
R506	1-242-649-11	100 (USA Model)
	1-244-849-11	100 ½W (AEP, E and UK Models)
R507	1-242-696-11	9.1 k 2%
R508	1-210-868-11	12 k 2%
R509	1-210-878-11	22 k 2%
R510	1-210-875-11	3.3 k 2%
R511	1-244-849-11	100 ½W
R512	1-210-875-11	3.3 k 2%
R513	1-242-705-11	22 k
R514	1-242-695-11	8.2 k
R515	1-242-693-11	6.8 k
R516	1-242-697-11	10 k
R517	1-242-713-11	47 k
R518	1-242-707-11	27 k
R519	1-242-680-11	2 k
R520	1-242-677-11	1.5 k
R521	1-242-637-11	33
R522	1-242-649-11	100
R523	1-222-775-00	22 k, adjustable
R524	1-242-709-11	33 k
R525	1-242-657-11	220
R601	1-242-683-11	2.7 k
R602	1-242-703-11	18 k
R603	1-242-681-11	2.2 k
R604	1-242-637-11	33
R605	1-242-705-11	22 k
R606	1-242-709-11	33 k
R607	1-242-705-11	22 k
R608	1-242-701-11	15 k
R609	1-242-681-11	2.2 k
R610	1-242-705-11	22 k
R611	1-242-713-11	47 k
R612	1-242-691-11	5.6 k
R613	1-242-721-11	100 k
R614, 615	1-242-715-11	56 k
R616	1-242-699-11	12 k
R617	1-242-697-11	10
R618	1-242-691-11	5.6 k
R619	1-242-719-11	82 k
R620	1-242-675-11	1.2 k
R621	1-206-439-11	1 metal oxide
R622	1-242-701-11	15 k
R623	1-242-715-11	56 k

Ref. No.	Part No.	Description	
R624	1-242-709-11	33 k	
R625	1-242-721-11	100 k	
R626	1-242-701-11	15 k	
R627	1-242-625-11	10	
R628	1-242-709-11	33 k	
R629	1-242-705-11	22 k	
R630	1-244-865-11	470	
R631	1-242-713-11	47 k	
R632	1-242-721-11	100 k	
R633	1-242-613-11	3.3	
R634	1-242-685-11	3.3 k	
R635	1-206-439-11	1	metal oxide
R636	1-242-639-11	39	
R637	1-242-691-11	5.6 k	
R638	1-242-689-11	4.7 k	
R639	1-242-641-11	47	
R640	1-242-721-11	100 k	
R641	1-242-625-11	10	
R642	1-242-687-11	3.9 k	
R643	1-242-639-11	39	
R644	1-242-709-11	33 k	
R645	1-242-685-11	3.3 k	
R646	1-244-699-11	12 k	
R647	1-242-697-11	10 k	
R648	1-244-649-11	100	

SWITCHES

S1	1-516-481-00	Lever,Slide, MONITOR
S2	1-514-978-21	Slide, record/playback
S3	1-513-273-00	Slide, timing
S4	1-514-448-00	Slide, HEADPHONE LEVEL
S5	1-516-181-00	Push, POWER (E and USA Models)
	1-516-277-00	Push, POWER (AEP and UK Models)
S6	1-514-655-00	Rocker, 50 Hz-60 Hz change-over (E Model)
	1-514-472-00	Rocker, 50 Hz-60 Hz change-over (AEP and UK Models)
S7	1-516-591-00	Push, FILTER
S8	1-516-483-00	Push, LIMITER
S9	1-514-722-00	Micro, PAUSE (1)
S10	1-516-591-00	Push, DOLBY NR
S11	1-516-591-00	Push, CAL TONE
S12	1-516-482-00	Lever-slide, TAPE SELECT; BIAS
S13	1-516-482-00	Lever-slide, TAPE SELECT; EQ
S14	1-516-591-00	Push, FM DOLBY NR
S601	1-514-722-00	Micro, solenoid
S602	————	Leaf, counter; included in tape counter
S603	1-516-133-00	Slide, MEMORY COUNTER
S604	1-514-880-00	Leaf, rewind
S605	1-516-134-00	Leaf, PAUSE (2)
S606	1-514-722-00	Micro, transient
S607	1-514-722-00	Micro, function
S608	1-514-722-00	Micro, cassette

JACKS

CNJ101, CNJ201, CNJ301, CNJ401	1-507-433-00	4 p, LINE IN/LINE OUT
CNJ501	1-509-549-00	Connector, REC/PB (AEP, E and UK Models)
J301, 401	1-507-282-00	Phone, MICROPHONE L, R; JM-60, M-21
J502	1-507-376-00	Binaural, HEADPHONE; JM-60, M-15

MISCELLANEOUS

CP1	1-231-057-31	Encapsulated Component, C-R; 0.033 μF + 120 Ω, 500 V
CP2	8-742-520-00	Module, power supply BX-252
CP3	1-464-038-00	Pack, bias osc
F	1-532-133-00	Fuse, 0.63 A (E Model)
F1	1-532-235-00	Fuse, 315 mA (AEP and UK Models)
F2, 5	1-532-063-00	Fuse, 1 A (AEP and UK Models)
F3, 4	1-532-074-00	Fuse, 200 mAT (AEP and UK Models)
F6	1-532-205-00	Fuse, 200 mA (AEP and UK Models)
LPF301, LPF401	1-231-219-00	Unit, low-pass filter
EH501	8-825-624-00	Head, erase; EF157-36
M	8-831-526-00	Motor, HC-526
ME101, ME201	1-520-187-00	Meter, VU
PH201	8-825-623-00	Head, playback; PF145-3602B
PL3 ~ 8	1-518-114-xx	Lamp
PM1	1-454-122-00	Solenoid, function
PM2	1-454-123-00	Solenoid, stop
RH301	8-824-801-00	Head, record; RF155-6102
	1-533-102-00	Holder, fuse (E Model)
	1-533-125-00	Holder, fuse (AEP and UK Models)
	1-534-487-00	Cord, power (E Model)
	1-534-538-21	Cord, power (USA Model)
	1-535-506-00	Terminal, crimping
	1-536-395-00	Terminal Strip, 1L1
VS	1-509-427-00	Voltage Selector (E Model)
	1-509-482-00	Socket, voltage selector (AEP and UK Models)
J601	1-509-546-00	Connector, 3 p; AC IN (AEP and UK Models)

SECTION 7

HARDWARE

Part No.	*Description*
	SCREWS
	All screws are Phillips type (cross recess type) unless otherwise indicated. (–); slotted head.
7-621-255-34	PS 2.6 x 5
7-621-259-04	PSW 2.6 x 5
7-621-259-15	P 2.6 x 3
7-621-646-02	PS 3 x 5
7-621-647-02	PS 3 x 6
7-621-649-02	PS 3 x 10
7-621-650-02	PS 3 x 12
7-621-710-29	SC 2 x 3; w/hexagon socket
7-621-259-52	P 2.6 x 8
7-628-253-95	PS 2.6 x 4
7-628-254-05	PS 2.6 x 5
7-682-124-04	P 2 x 4
7-682-125-01	P 2 x 5

Part No.	*Description*
7-682-127-01	P 2 x 8
7-682-129-01	P 2 x 10
7-682-253-15	PS 2 x 5
7-682-651-00	PS 3 x 14
7-682-528-01	B 2 x 10
7-682-549-01	B 3 x 10
7-682-646-00	PS 3 x 5
7-682-648-02	P 3 x 8
7-682-947-01	PSW 3 x 6
7-682-948-00	PSW 3 x 8
7-682-950-00	PSW 3 x 12
7-682-951-01	PSW 3 x 4
7-682-960-01	PSW 4 x 6
7-683-127-00	⊖ 2 x 4, set (w/cone point)
7-683-237-01	SC 3 x 3; (w/hexagon socket)
7-685-132-01	P 2.6 x 5
7-685-145-21	P 3 x 6, self-tapping

Hardware Nomenclature

P – Pan Head Screw

PS – Pan Head Screw with Spring Washer

K – Flat Countersunk Head Screw

B – Binding Head Screw

RK – Oval Countersunk Head Screw

T – Truss Head Screw

R – Round Head Screw

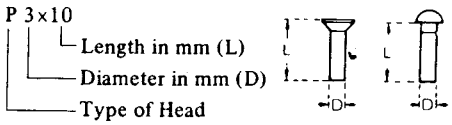
F – Flat Fillister Head Screw

SC – Set Screw

E – Retaining Ring (E Washer)

W – Washer
SW – Spring Washer
LW – Lock Washer
N – Nut

– Example –



MEMO

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